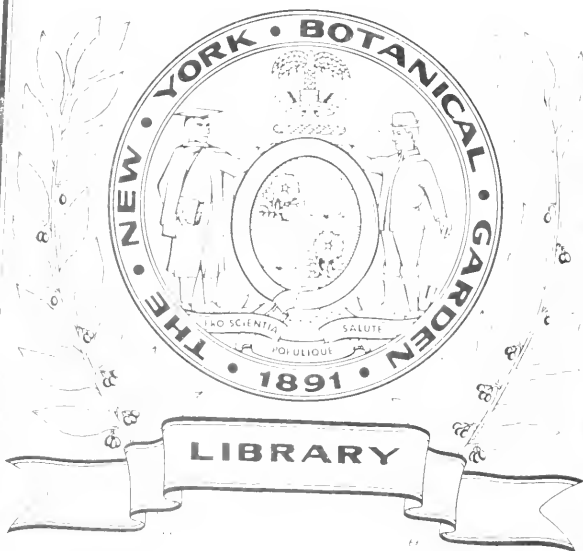
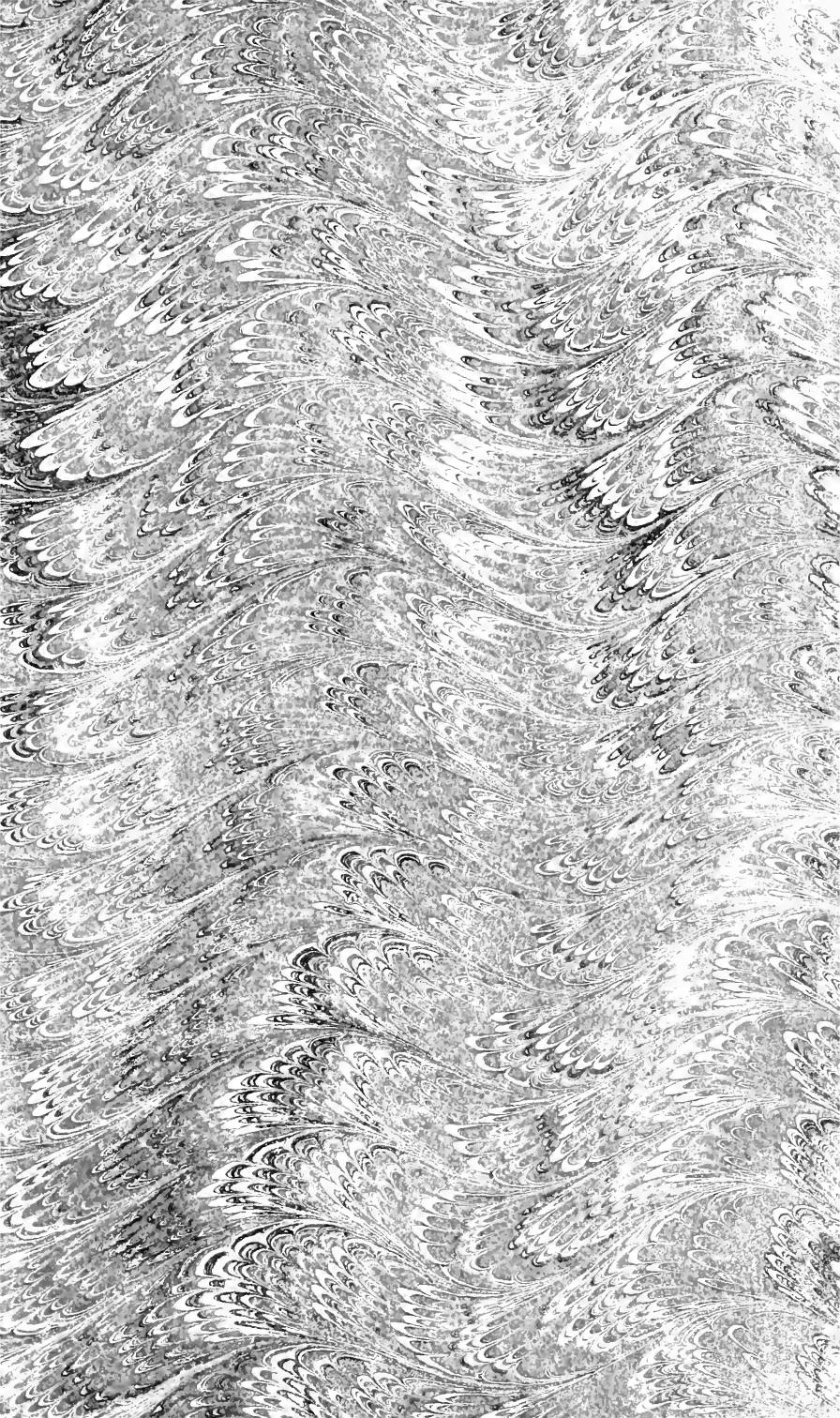


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THE DATES OF RAFINESQUE'S NEW FLORA AND FLORA TELLURIANA

BY JOHN HENDLEY BARNHART

As far as I am aware, no question has ever been raised concerning the reliability of the dates given on the title-pages of any of the works of Rafinesque. His *Autikon Botanikon*, to be sure, is dated 1815-1840, while no portion of the text was published until 1840; but this text was intended to illustrate an herbarium which the author had accumulated during the years 1815-1840, so that the meaning of the date he gives is manifest.

About a year ago I noticed in the *Flora Telluriana* (4: 27) a brief criticism of Gray's monograph of the Melanthaceae of North America, which was not published until November, 1837;* and this, of course, showed that Rafinesque's criticism could not have been published earlier than that date. A hurried examination revealed further internal evidence of the erroneous dating of the *Flora Telluriana* and its companion-work, the *New Flora of North America*, but the investigation of the subject was not carried very far at that time.

When the last number of the *North American Flora* was in press, it became necessary for Dr. Small to decide upon the relative priority of *Mesynium* Raf. ("1836") and *Cathartolinum* Reichenb. (1837), and this led to the study of which the results are here reported.

The *New Flora of North America* was undertaken by Rafinesque as a supplement to the works previously published by others upon the same topic; and as a result of his labors upon

* GRAY, A. *Melanthacearum Americae Septentrionalis Revisio*. Ann. Lyc. Nat. Hist. N. Y. 4: 105-140. N 1837.

it, he was led to undertake the preparation of its "sequel," the *Flora Telluriana*, dealing with the plants of the rest of the world. The pages of these two works contain many descriptions of "new genera" of plants, so that the dates of their appearance are of considerable importance. As the books themselves are quite scarce, a brief preliminary account of them may not be out of place.

Each was planned to consist of six "parts" or volumes, but was completed in four. Each of the eight parts is separately pagged, and has a separate title-page and subtitle of its own; and each is dated "1836."

NEW FLORA AND BOTANY OF NORTH AMERICA

First part. Introduction, Lexicon, Monographs. 100 pages. 1836.

Second part. Neophyton. 96 pages. 1836.

Third part. New Sylva. 96 pages. 1836.

Fourth part. Neobotanon. 112 pages. 1836. (This contained also a general title-page for the entire work, dated 1836.)

FLORA TELLURIANA

First part. Introduction and Classification. 103 pages. 1836.

Second part. Centuria I, II, III, IV. 112 pages. 1836.

Third part. Centuries V, VI, VII, VIII. 100 pages. 1836.

Fourth part. Centuries IX, X, XI, XII. 135 pages. 1836.

(This contained also a general title-page for the entire work dated 1836.)

Of these eight parts, the first part of the *New Flora* was the first to appear. It contained a dedication dated at Philadelphia, September, 1836; and pages 73-80 are occupied by a monograph of the genus *Kuhnia*, dated October, 1836. These facts alone are sufficient to make one suspect that perhaps the eight parts were not all issued before the end of that year! There is not lacking other internal evidence on this subject, in addition to the citation of Gray's monograph (*Fl. Tell.* 4: 27; also *New Fl.* 4: 103, where the date of "Grey's" paper is distinctly stated as "1837"). *Flora Telluriana*, part 3 (which in turn is cited by

New Fl. 3: 41, 51), on page 57 refers to Bot. Reg. *pl.* 1906 (1 N 1836!); and on page 37 to Bot. Mag. *pl.* 3540 (1 D 1836!), which could not well have reached Philadelphia before the end of the year 1836. Flora Telluriana, part 4 (which in turn is cited by New Fl. 4: 56, 57, 63, 98), on page 124 cites Bot. Reg. *pl.* 1958 (1 My 1837). But, in spite of these references, I know of no *internal* evidence that the two works were not completed before the end of the year 1837.

From internal evidence, too, it is possible to arrange the parts serially, in the order in which they were printed. This may be done by means of the exact citations, by page, of one work by the other; chiefly of the Flora Telluriana by the New Flora. The result is as follows: New Fl. I; Fl. Tell. I; Fl. Tell. II; New Fl. II; Fl. Tell. III; New Fl. III; Fl. Tell. IV; New Fl. IV.

In order to approximate more closely than might otherwise be possible the exact dates of issue of each of these parts, the series of letters written to Torrey by Rafinesque during the years 1836 to 1839, and preserved in the Torrey correspondence at the New York Botanical Garden, was searched, and the search was well rewarded, as is shown by the following quotations:

September 5, 1836.—“I having leisure have resolved to begin to print my New flora of North Amer. by alphabetical order. . . . When this Work is printed, my botanical labors from 1802 to 1836, in America, will be better known.”

December 21, 1836.—“My flora proceeds very slowly & was even suspended awhile for lack of a compositor that could print Botanical terms! . . . I have concluded to close the Lexicon of monographs very abruptly, and give instead selected monographs & my N. Genera & species.”

This shows that only ten days before the close of the year 1836 even the printing of the first part of the New Flora was not completed.

April 18, 1837.—“I wanted to surprise you with a great Botanical Work — my Flora telluriana . . . to which I was led by my New flora of N. Amer., but I could only print 2 parts or volumes. I. Classes & Orders. 2d. 400 N. Gen. my other engagts have compelled me to suspend for a while.”

By the middle of April, 1837, then, had been printed one part of the New Flora and two of the Flora Telluriana.

October 24, 1837. — "I am still going on slowly with my New flora of N. America and Flora telluriana at once. . . . I have circulated but few copies of the numbers published, wishing to surprise you and all Botanists when the whole shall be out; but if you wish to see them earlier I may send you 5 numbers of 100 pages 8vo each very soon, and more next March."

From this it appears likely that a second number of the New Flora had appeared when this letter was written, and that a third number of the Flora Telluriana was nearly ready; or else that the two parts were nearly ready to be issued together.

January 10, 1838. — "My New flora or Mantissa begun to print in 1836 is still going on & altho' interrupted by my flora Telluriana & 2 works published this Spring (1. The Universe. — 2. Safe Banking) is proceeding as fast as correct exam. can allow. I wished to issue the whole work together; but I shall be compelled to issue when half is ready 3 numbers of 100 pages as in Flora tellur. My 3d N. on the Trees and Shrubs or a New sylvia is not quite ready."

At the end of 1837, then, three numbers of the Flora Telluriana had been issued, and two of the New Flora, but on January 10, 1838, the third part of the New Flora was "not quite ready."

March 20, 1838. — "I have long ago concluded 600 pages of my Supplemental Flora & Flora Telluriana or 6 parts. If I had not undertaken these 2 works together, the first would have been completed ere now, but will be ere 1840."

The third part of the New Flora had evidently been published since the date of the January letter. It appears that Rafinesque still intended each work to consist of six parts, and for this reason allowed himself until 1840 to complete them.

February 1, 1839. — "My 4th part or Volume of New flora was completed so as to give you time to go on with your flora. I also completed my Flora telluriana in 4 Vol. or 1225 articles. But immed^d after begun & have concluded last Dec^r my Synopsis of N. G. & Sp. of Trees & Shrubs of N. Amer."

From this it appears that prior to December, 1838, both the

Flora Telluriana and the New Flora had been completed. The last sentence refers to Rafinesque's *Alsographia Americana*, which was dated 1838, and from his own statement above was probably issued in December of that year.

The extracts from Rafinesque's letters show that few, if indeed any, copies of either the *Flora Telluriana* or the *New Flora* had been actually distributed until three parts of each had been printed (in the spring of 1838); but, as he says in the letter of October 24, 1837, "I have circulated but few copies of the numbers published," we must give him the benefit of the doubt, and assume that he had distributed a few copies.

Rafinesque's *Bulletin of the Historical and Natural Sciences* was an advertising sheet issued by him at irregular intervals from 1834 to 1839. No. 7, dated "Spring of 1838," is devoted chiefly to the two works here under discussion. He says in part : "I had long contemplated to give a *New Flora of North America*. . . . I resolved . . . to add the improvements on Natural classification. These last, however, increased so much under my revision, as to become a work by itself, and a companion rather than addition to our *Flora*. Both works were begun in 1836, and our plants would all have been published by this time, if I had not thus been compelled to double these botanical labors. I once proposed to issue the whole at once when completed, but this delay and others arising from different pursuits and labors, have induced me to publish the parts as soon as printed, and now that 3 parts of each (being half a volume,) are published, I issue this *Bulletin* to acquaint the Botanists of Europe and America with" them. "Each work is to consist of 6 parts of 100 to 120 pages, thus forming a volume large octavo of 600 to 700 pages, which shall be completed in 1840 or sooner. . . . The 6 parts now printed, 3 of each work, will be sold together for \$5."

The dates of the two works under discussion, as nearly as they can be determined from the evidence here submitted, may be summarized as follows :

NEW FLORA	Part	I. 1836 (December).
		II. 1837 (second half).
		III. 1838 (first quarter).
		IV. 1838 (late in year).

FLORA TELLURIANA. Part I. 1837 (first quarter).

II. 1837 (first quarter).

III. 1837 (November or December).

IV. 1838 (near middle of year).

NEW YORK BOTANICAL GARDEN.

NEW FLORA

John Torrey
OF

NORTH AMERICA,

BY

PROF. RAFINESQUE.

FIRST PART.

Introduction, Lexicon, Monographs.

PHILADELPHIA



1836.

FIRST PART.
INTROD. LEXICON, &c.

NEW FLORA
AND BOTANY

OF

NORTH AMERICA.

BEING A SUPPLEMENTAL FLORA,

To the various Floras and Botanical Works of Michaux, Muhlenberg, Pursh, Nuttall, Elliot, Torrey, Beck, Eaton, Bigelow, Barton, Robin, Hooker, Riddell, Darlington, Schweinitz, Gibbs, &c.

Besides the general works of Linneus, Willdenow, Vahl, Vitman, Persoon, Lamark, Decandole, Sprengel, Jussieu, Adanson, Necker, Lindley, &c. Containing nearly 500 additional or revised New Genera, and 1500 additional or corrected New Species, illustrated by figures in *AUTIKON* & *BOTANIKON*.

BY C. S. RAFINESQUE, A. M.—PH. D.

Prof. of Botany, the historical and natural sciences—

Member of many learned Societies in Paris, Vienna, Bonn, Bruxelles, Bordeaux, Zurich, Naples, &c. and in Philadelphia, New York, Cincinnati, Lexington, &c.

The Floral wealth in this wide land concealed,
Will be at last by learned care revealed.

PHILADELPHIA:

PRINTED FOR THE AUTHOR AND PUBLISHER.

1836.

DEDICATION.



To all my fellow BOTANISTS in the United States of North America, and chiefly to those who are endeavoring to complete and illustrate our Botany—I DEDICATE these pages, results of 24 years of observations and researches.

But above all, to my friends, colleagues, or contributors now living, and to the memory of the worthy departed, Elliot, Collins, Schweinitz, Pursh, Conrad, Bradbury . . . in grateful remembrance of their worth and kind help. . . . D. D. D.

PHILADELPHIA, September, 1836.

THE AUTHOR.

INTRODUCTION.



After many years of active researches in the continent of North America, I was meditating to write a new Flora of it; but was long dubious in what form to produce it. To enumerate and describe all the plants of this vast region in a proper form and natural classification, would be a very acceptable labor, but a very arduous task, to which, altho' I felt quite competent, it was not possible to think of, owing to the expense of it, particularly if many figures were given. All our Botanists have shrunk from this undertaking, except Hooker in his Flora of Canada and Boreal America, now publishing by the help of patronage. Zeal alone does not avail in this as in collecting, other pecuniary means are required.

It has been found more practicable and nearly as useful by our Botanists to publish abridged Floras on the Linnæan plan, of which Michaux and Pursh gave the example; while Nuttall, Torrey, Eaton, Beck, &c. have followed nearly the same path. Elliot alone has somewhat enlarged his labor, and produced a most egregious work.

None but such condensed or compiled works on our Botany, have been found acceptable to all and saleable; while the elaborate and learned works, full of discoveries and ample researches, can only be appreciated by a few, and even often excite the envy of the learned rivals.

Under such predicament, I was compelled to decide upon a middle course; and I therefore undertook this work as a Supplemental Flora of North America, a kind of mantissa and appendix to all my predecessors, avoiding thereby much expense and trouble in accumulating all the scattered materials and fragments already published: altho' I endeavored to collect them whenever I had to frame some peculiar careful monographs of neglected Genera or families. The illustration by figures of my New Genera and New Species will be kept apart in mpt. to be sold apart to any institution or individual that wish to possess them, as well as my botanical specimens, general Herbarium, and original typical sets collected together under the name of my AUTIKON BOTANIKON.

I have called this work, a *New Flora of North America*, and such it is in fact: a real FLORA, although not classed by the false sexual system, nor even my own improved natural method, but arranged differently. I do not even know yet exactly how it will be gone through; but I propose to commence by a sample of a *Lexicon* to be contrasted with the manual Lexicon of Eaton, and go on with monographs of interesting Genera or Families, with a SYLVA of my New Trees and Shrubs, a *Neogenyton* or account of New Genera, and a *Neobotanon* or compendium of new species. I may, however, deviate from this plan if needful or desirable, and I hope to conclude the whole by a general Index, both alphabetical and classified naturally of all the Families and Genera.

While I was preparing this work, I found myself so often perplexed and involved into difficulties, by the actual improper framing of Ge-

nera, that I was compelled to take up the subject of Generic reform simultaneously with this new flora. This has greatly increased my labors and delayed the publication; but vastly enlarged my field of botanical researches, now based on generic accuracy.

In fact till lately most of the Botanists, both here and elsewhere, were perfectly satisfied with the Linnean Genera, and thought they had done their utmost when they referred the Linnean or new species, *quite at random* to those Linnean Genera; often avoiding or neglecting to notice their peculiar floral characters, not seldom at variance with the Genera referred to. The labors of Adanson, Jussieu, Necker, Mœneh, Lamarck, &c. upon generic reforms were often overlooked or neglected. At last a better feeling has been prevailing, and the modern improvers Decandole, Agardh, Robert Brown, Lindley, &c. have restored many of the old Genera, or further corrected generic nomenclature.

As I rank among these botanical reformers ever since 1808 when I first published new Genera, and 1815 when I published the outlines of my reformed Natural Families, it was just and proper that I should resume these investigations, now that I mean to give the results of a whole life of botanical travels, discoveries and arduous researches. This shall then be done in a colateral work published at the same time, but kept apart, which I shall call *Flora telluriana* or synoptical mantissa of 2000 new families, Genera and species of plants of the whole earth. There most of my generic and other reforms will be elucidated, and I shall merely refer to them in this N. Amer. Flora.

Here, the new species of this continent shall be chiefly attended to. They are often in as great a disorder as the Genera; many are occasionally blended into one, or improperly determined and settled. To give their synonymy is not always an easy task, nor are the varieties to be overlooked. Many botanists mistake real botanical species for varieties or viceversa. In fact all species might have been varieties once, and many varieties are gradually becoming species by assuming constant and peculiar characters. This is an interesting feature of botanical philosophy, which I shall properly explain and prove hereafter.

This new Flora is very far, therefore, from being a compilation of former labors: it is quite an original work, chiefly based upon my individual researches and discoveries, during 36 years of botanical travels and exertions, whereof 24 were spent in North America, the main field of my scientific rambles and labors.

It may perhaps be useful to give here an outline of my botanical travels in North America, whereby it will be perceived that I have surveyed and examined more States and regions than any other Botanist perhaps except Nuttall. Thus I was enabled to detect a great number of New Species, and examine many plants alive in full bloom in their native wilds. It would be well if botanical writers would thus detail us their actual excursions and explorations.

Some plants are quite local or have very narrow limits of growth, others are only in bloom for a few hours or days. Many early vernal plants of the Genera *Dodecatheon*, *Clintonia*, *Vernasolis*, *Viola*, *Peltandra*, *Cypripedium*, &c. can only be seen in narrow localities during

the month of May. Others of the Genera *Gentiana*, *Kuhnia*, *Eclipta*, *Spiranthes*, *Aster*, *Solidago*, with many radiate Genera, are quite late and autumnal, found chiefly in October: therefore they had escaped the notice of our Botanists, who chiefly botanize or travel in summer.

Other plants are confined to Mountains, or Pinelands, or Western Glades, or deep Swamps, which must be visited by turns, if we wish to collect them. I have sometimes looked in vain for years for some particular plants, at the very places where they are known to grow, because I was not in the due season: this happens to all Botanists, and it is very important for collectors to know the precise epoch of blooming and seeding. What escapes one of them may be met by another a little earlier or later. There are besides years when some plants bloom more abundantly, and others like the *Miegia*, *Enslenia*, &c. only bloom once in many years.

I came to North America in 1802, and travelled chiefly on foot until 1804, over New Jersey, Pennsylvania, Delaware, Maryland, and Virginia, from the Juniata to the Sea Shore, and from the Alleghany Mountains beyond Easton, to the Potomac beyond Washington and Alexandria. Some of the results of my discoveries in those three years of early travels were published in 1808.

In 1805 I left America for Europe, where I remained till 1815. On my return to this continent in that year, I was shipwrecked on the shores of Connecticut, and lost all my former Herbals and collections, both American and European.

Therefore being deprived of all my first labors in Botany, Zoology, and Mineralogy in that memorable year 1815, I had to begin again my researches and collections, which I pursued ever since with renewed zeal, always at my own sole expense. I spent 1815 and 1816 in the States of New York, New Jersey, and Pennsylvania chiefly. In 1816 I went to explore as far as Lake Champlain, Vermont, and the Saranac Mountains, near the sources of the Hudson River. In 1817 I went to the Mattawan and Kiskatom, or Catskill Mountains, and explored Long Island, where I dwelt awhile.

But my great travels in the West began in 1818, I made a tour of 2000 miles as far as the Wabash River, crossing twice the Alleghany Mountains on foot, and exploring Ohio, Indiana, Illinois, Kentucky, &c. Some of the results of my former discoveries in that journey were published in 1819, in the *Physical Journal of Paris*, in 80 new *Gen. of Plants*, and 70 *New Gen. of Animals*.

Having been appointed Professor of Natural Sciences in the University of Lexington, in Kentucky, I went there in 1819, crossing a third time the Alleghany Mountains, through the Cumberland road of Maryland, still on foot, as I never would cross these beautiful mountains in any other way, in order to botanize all the while, and I was rewarded by many new plants.

I spent seven years in Kentucky in 1826, exploring that State thoroughly, and making excursions to Ohio, &c., my longest journeys were in 1823, when I went West as far as the Rivers Cumberland and Tennessee near their

mouths, and next East to the falls of the Cumberland River and the Wasieto or Cumberland mountains.

In 1825 I undertook a long journey through Ohio, and Virginia, crossing the Alleghany mountains of Virginia, and returning by the Alleghanies of Pennsylvania, always on foot. Next year, 1826, I left Kentucky and settled in Philadelphia: but took a very long botanical journey in the way, going through Ohio to Sandusky on Lake Erie; thence to Buffalo, Niagara, Canada, the New York Canal, &c.

My excursions in 1827, were to the Sea Shores of New Jersey, and thence to Troy, the Taconick mountain, and through Massachusetts to Boston, returning by a different road. In 1828, I went to the Alleghany mountains of the North on the Lehigh, the Schooley mountains of New Jersey, and Mattawan mountains of New York. In 1829, I went to the Pine-barrens of New Jersey, and as far as Connecticut. In 1830, I made a second journey to the Kiskatom mountains of New York.

Several botanical excursions and journeys were undertaken in 1831, in Delaware, New Jersey, and the Taconick mountains. While in 1832 I visited Maryland twice, the second time I explored the Cotocton mountains of Maryland, and Alleghany mountains as far as Sherman Valley and the Juniata, quite at leisure, residing some times at the top of the mountains.

In the year 1833 I proposed to visit the Apalachian mountains as far as Alabama: but was prevented by an accident and heavy rains; I only went as far as those of Virginia, and again in the Cotocton mountains.—In a second

journey I undertook to visit the sources of the river Delaware, and Susquehannah, exploring first the Pine barrens and Sea shores of New Jersey, next going from Albany over the Heidelberg mountains to the Lake Utsiantha source of the Delaware at the foot of the Kiskatom mountains, and Lake Otsego source of the Susquehannah.

The year 1834 saw me twice in the Alleghany mountains of the north, once by following the course of the Delaware, the second time westward by the Welsh mountains, Conewago mountains, Albany mountains, Locust mountains to the Pottsville mines and the source of the Schuylkill river, returning by Mauchchunk and Allentown.

My travels of 1835 were in the Central Alleghanies up the River Juniata and Susquehannah, exploring the mountains of Peters, Buffalo, Wiconisco, Mahantango, Tuscarora, Jack, Seven mountains, &c. with their Valleys. An account of all these travels and excursions is given by me more at length in my *Life of travels and researches*, published early in 1836. Since then I have chiefly explored South New Jersey and the pine barrens.

Although these journeys were often undertaken with the additional ulterior view to collect Fossils and Animals, my favorite science and pursuit of Botany was always my main object. I always travelled with my botanical collecting book and reams of paper to preserve my plants: and thus I have been enabled to collect in 20 years, since 1816, a most valuable Herbarium, rich in new species, rare plants, and complete Monographs; which have been increased by exchanges and purchases, chiefly of

Southern plants; not having been able to explore as yet the Southern States, deterred by the bad roads, unhealthy climate, scanty fare, heavy expenses and state of society. A pedestrian Botanist is not always very welcome there.

During so many years of active and arduous explorations, I have met of course all kinds of adventures, fares and treatment. I have been welcomed under the hospitable roof of friends of knowledge or enterprise, else laughed at as a mad Botanist by scornful ignorance. Often deemed a herbalist and wandering doctor by the vulgar, I have allowed or indulged this harmless belief, and thereby elicited from many quarters the local knowledge of medical facts, which I have published in my *Medical Flora of the United States*.

I have seldom met with liberal enlightened men, who could believe that I was actuated by the pure love of knowledge and science; yet I have found such worthy men sometimes and their names are gratefully impressed on my memory. Such were J. D. Clifford, Alex. Walsh, Mess. Knevels, Adlum, Dr. Schultz, D. Jackson, H. Clay, Clinton, Meade, MacLane, Wells, Thompson, Aldie, &c. who without being Botanists, or at most mere florists, could appreciate my pursuits and facilitate my researches. As to Botanists and Zooligists I made it a point to search for them and enjoy their society, mutually imparting our knowledge.

Such a life of travels and exertions has its pleasures and its pains, its sudden delights and deep joys mixt with dangers, trials, difficulties, and troubles. No one could better paint them than myself, who has experienced them all; but

I must be brief in conveying a slight idea of them.

Let the practical Botanist who wishes like myself to be a pioneer of science, and to increase the knowledge of plants, be fully prepared to meet dangers of all sorts in the wild groves and mountains of America. The mere fatigue of a pedestrian journey is nothing compared to the gloom of solitary forests, when not a human being is met for many miles, and if met he may be mistrusted; when the food and collections must be carried in your pocket or knapsack from day to day; when the fare is not only scanty but sometimes worse; when you must live on corn bread and salt pork, be burnt and steamed by a hot sun at noon, or drenched by rain, even with an umbrella in hand, as I always had.

Musquitoes and flies will often annoy you or suck your blood if you stop or leave a hurried step. Gnats dance before the eyes and often fall in unless you shut them; insects creep on you and into your ears. Ants crawl on you whenever you rest on the ground, wasps will assail you like furies if you touch their nests. But ticks the worst of all are unavoidable whenever you go among bushes, and stick to you in crowds, filling your skin with pimples and sores. Spiders, gallineps, horse-flies and other obnoxious insects will often beset you, or sorely hurt you. Hateful snakes are met, and if poisonous are very dangerous, some do not warn you off like the Rattle-snakes.

You meet rough or muddy roads to vex you, and blind paths to perplex you, rocks, mountains, and steep ascents. You may often lose your way, and must always have a compass

with you as I had. You may be lamed in climbing rocks for plants or break your limbs by a fall. You must cross and wade through brooks, creeks, rivers, and swamps. In deep fords or in swift streams you may lose your footing and be drowned. You may be overtaken by a storm, the trees fall around you, the thunder roars and strikes before you. The winds may annoy you, the fire of heaven or of men sets fire to the grass or forest, and you may be surrounded by it, unless you fly for your life.

You may travel over a unhealthy region or in a sickly season, you may fall sick on the road and become helpless, unless you be very careful, abstemious and temperate.

Such are some of the dangers and troubles of a botanical excursion in the mountains and forests of North America. The sedentary botanists or those who travel in carriages or by steamboats, know little of them; those who merely herborize near a city or town, do not appreciate the courage of those who brave such dangers to reap the botanical wealth of the land, nor sufficiently value the collections thus made.

Yet although I have felt all those miseries, I have escaped some to which others are liable. I have never been compelled to sleep at night on the ground, but have always found a shelter. I have never been actually starved, nor assailed by snakes or wild beasts, nor robbed, nor drowned, nor suddenly unwell. Temperance and the disuse of tobacco have partly availed me, and always kept me in health.

In fact I never was healthier and happier than when I encountered those dangers, while a

sedentary life has often made me unhappy or unwell. I like the free range of the woods and glades, I hate the sight of fences like the Indians! The free constant exercise and pleasurable excitement is always conducive to health and pleasure.

The pleasures of a botanical exploration fully compensate for these miseries and dangers, else no one would be a travelling Botanist, nor spend his time and money in vain. Many fair-days and fair-roads are met with, a clear sky or a bracing breeze inspires delight and ease, you breathe the pure air of the country, every rill and brook offers a draught of limpid fluid. What delight to meet with a spring after a thirsty walk, or a bowl of cool milk out of the dairy! What sound sleep at night after a long day's walk, what soothing naps at noon under a shaded tree near a purling brook!

Every step taken into the fields, groves, and hills, appears to afford new enjoyments, Landscapes and Plants jointly meet in your sight. Here is an old acquaintance seen again; there a novelty, a rare plant, perhaps a new one! greets your view: you hasten to pluck it, examine it, admire, and put it in your book. Then you walk on thinking what it might be, or may be made by you hereafter. You feel an exultation, you are a conqueror, you have made a conquest over Nature, you are going to add a new object, or a page to science. This peaceful conquest has cost no tears, but fills your mind with a proud sensation of not being useless on earth, of having detected another link of the creative power of God.

Such are the delightful feelings of a real botanist, who travels not for lucre nor paltry pay.

Those who do, often think only of how much the root or the seed or the specimen will fetch at home or in their garden.

When you ramble by turns in the shady groves, grassy glades, rocky hills, or steep mountains, you meet new charms peculiar to each; even the gloomy forest affords a shady walk. Every rock, nook, rill . . . has peculiar plants inviting your attention. When nothing new nor rare appears, you commune with your mind and your God in lofty thoughts or dreams of happiness. Every pure Botanist is a good man, a happy man, and a religious man! He lives with God in his wide temple not made by hands

To these botanical pleasures may be added the anticipation of the future names, places, uses, history, &c. of the plants you discover. For the winter or season of rest, are reserved the sedentary pleasures of comparing, studying, naming, describing and publishing. A time may come, when if all plants are well known, little will be left to be done, except seeking rare plants or occasional deviations and varieties; but a long while will elapse before this may take place, since so few of our plants are completely known as yet. Then will begin the labors of the draftsman, the collector of rare plants and roots, or the seeking of special and generic deviations.

In this another wide field of researches will be open to the enquiring mind. My thoughts have often been led thereto when noticing singular deviations. I admit like Adanson, Necker and Linneus himself that plants do vary gradually and constantly, although often very slowly, both in the specific and generic

characters. I refer to these authors for examples so often met in gardens; but I have chiefly attended to this in the woods and fields where quite spontaneous.

The process is by the seedlings being somewhat different from the parents, and thus evincing a deviation of typical mould, that may be, or may not be, propagated again. If it is, this soon assumes a permanence, becoming a permanent variety if the deviation is slight, such as mere color of flowers, size of stem, leaves, &c.; but becoming a New Species! if at last several deviations are permanently combined. A tendency to such deviations is sometimes met even in the various annual shoots of the perennial plants, or shrubs and trees, that are not always alike to those of the preceding years.

* The specific deviations which I could mention are numberless, this work will be full of them, as all new species are in fact such permanent deviations of growth, unless they are widely different from all former species. The oldest type of the species may probably be found in the most common with most numerous individuals, while those called rare or with few individuals as yet must be the newest in order of time.

Generic deviations are more rarely observed or noticed, because less evident and very slowly produced, or not so easily propagated; but I shall mention here some very striking instances of them; while many more are to be met with in all the Genera, where the characters are polymorphous, expressed by SO ... OR SO, 3-5 fidis, 4-5 andris, 3-4 stylis, Capsule with 4 or 5 valves, one or many seeds, &c.

1. I have seen in a garden a Tulip with 5

petals only and 5 stamens. That was even a deviation from the family!

2. I have met with a *Tecoma* bearing a capsule with 3 valves, the generic character is bivalve.

3. *Asters* and *Solidagos* with the ligules mixt with the florets, forming a kind of peloric genus which I have called *Mictanthes*.

4. The *Aster discoides* of Elliot or my genus *Anactis*, has no rays, it must have been a deviated genus like *Eclipta* from *Verbesina*. I have met some *Asters* with the rays so shortened as to be almost invisible.

5. My G. *GONONCUS* has two sorts of flowers and seeds on the same plant, uniting the characters of *Polygonum* and *Persicaria*.

6. My G. *Styrandra* appears to have originated once from *Convallaria* or rather *Majanthemum*, just like *Paris* from *Trillium*.

7. Many monoical and dioical plants return to Polygamy and hermaphroditism. This is the case with some of our Vines, *Vitis*, *Morus*, *Urtica*, *Callitriche*, &c.

8. Nothing more common than monstrous deviations by addition or deficiency of parts, which are as many links of generic variations.

Of all the European Floras, that in which generic and specific deviations are most explicitly stated and best detailed, is the Flora Lithuanica of Gilibert, where many similar anomalies may be noticed.

Therefore the result will be that our species and genera are not quite permanent as supposed, but are gradually producing deviations of forms; when these are floral they are of course

generic, and may after centuries form New Genera.

Hybridity also multiplies species: this process is much more common in plants than animals; but it is often difficult to detect in the wild plants the real parents. Unless they are both found growing near the hybrid, and it has the traces of both forms, we may as safely ascribe it to a natural deviation of frame, called Peloric if floral and generic.

Some Botanists have different ideas of Genera, species, and varieties: their errors and my corrections will be found in the principles of my FLORA TELLURIANA. I merely recapitulate here my ideas of them, deduced from 40 years of botanical observations.

SPECIES include all the individuals perfectly alike in all their parts—*Varieties* are slight casual deviations—*Proles* are permanent varieties, such as are called *Breeds* among animals.

GENERA are the groups of species that have similar floral characters and sometimes a similar habit. Whenever a species has different floral forms it must be a peculiar genus.

Such are the natural distinctions of those two groups, any others must be unnatural and improper! All species may have been varieties once, except the original types or ancestors of the genus, and all actual varieties may be incipient species.

My views of the natural method will be given in my FLORA TELLURIANA, where I shall correct and improve my former classes, orders and families of 1815 in *Analysis of Nature*. I have adopted and studied the natural method since 1800, I have always tried to improve it,

I have always been opposed to the Linnean system and its blunders; but the natural method has had so long, and has perhaps yet, so many anomalies, that unless they are rectified, the study of affinities will be impeded. Jussieu had a crowd of genera *incerta sedis*, or annexed to orders without belonging thereto, which were a Dedalus of ambiguity. The modern Decandole, Richard, Lindley, Agardh have partly improved this Labyrinth; but the clue to guide us is now in our hands! Let every genus that does not agree in general frame and characters be removed, and placed elsewhere, as I have done. When this is done and generally adopted we may hope to reach a perfect classification: while that of Lindley for instance. is as yet quite loose and inaccurate, as bad as Adanson or Necker's; since one fourth of his genera do not agree to the common characters ascribed, and some orders have none at all . . .

This is the ambiguity and absurdity carried from Species and Genera to the National Orders! unless restricted or exploded in all instances, we can have no correct nomenclature nor classification. What absurdity to have an order without *definition*, like the patched genera *Gentiana* and *Convallaria* for instance! a false definition that does not apply to all the Genera or Species, is equal to no definition at all . .

Our North American Botanists were very late in noticing the natural method, and even now hardly admit of it, or else without restriction on its defects. From 1802 to 1804 I was perhaps the only one that followed that new path, Barton, Muhlenberg, and others of that

period would not even listen to it. Correa alone began to give lectures on it towards 1816, I vainly tried to introduce it in 1817. Pursh, Elliot, Torrey, Nuttall, Eaton, Bigelow, &c. all wrote their works on the sexual plan. Eaton alone added thereto the orders of Jussieu to his manual : yet he was amazed when Torrey published his edition of Lindley ! Since he and Hooker have begun to open the path in England, Beck and Torrey have begun to follow, while a few others begin to incline towards it : yet Adanson had disclosed it since 1763, and Robin Flora of Lonisiana used it in 1807.

Its progress will be slow here, because it requires application and study, and my improvements require besides accuracy and perspicuity. It will be easier to follow the blunders of Lindley as formerly those of Linneus without investigation. My own labors on families and genera will perhaps meet the fate of those of Adanson and Necker, and be denied belief or assent for half a century like theirs ; but the time will come at last to grant me justice, and admit me among the classical improvers of the science.

Jealousy of my great labors and discoveries may influence some ; but I hope that real Botanists ought always to be impartial. Torrey is my friend, although we differ in our views of Genera and Species, Nuttall has done so much already and has so much yet to bring forth from Origen, that he need not be jealous of my labors. Many other Botanists profess to value them. I know of no one that is my avowed foe like Dr. Harlan is for Zoology—I have been liberal and friendly to all, if they do not reci-

procate, it must be out of bad and improper feelings.

I have had warm friends and patrons for awhile ; but I have been deprived of them all by death already, J. D. Clifford, Z. Collins, D. Clinton, Dr. Mitchill, Dr. Jackson, were such. May I meet similar new patrons in my old age!

Although this Flora will exhibit me as a learned Botanist, accurate observer, and zealous discoverer, it does not afford me the means of appearing as a Draftsman, Collector of specimens, Medical Botanist, &c. for which I must refer to my other works, Medical Botany with 100 figures, my Autikon Botanikon, &c.

I have written my Botanical Works in 4 languages, Latin, French, Italian and English ! I now write this entirely in English in order to make it available to all our Botanists ; but my Flora Telluriana will be partly in Latin, at least for generic and specific characters.

It is usual for accurate Botanists to state the kind of *botanical evidence* that they can give, which is usually expressed by v. v. meaning seen alive—v. s. seen dry, &c. but this may be very delusive since many plants seen alive are only seen in gardens and not in their natural state, or the floral characters have not been examined. Greater accuracy should be required and I state at once that all the plants I describe have been met alive, and collected by me in their native soils, in bloom and seeds unless I otherwise state the facts ; whether seen without seeds, or only in gardens.

As to dried or 'preserved plants, they may also have been with or without seeds ; always

with flowers however and carefully examined generically; although it is not always easy to see well the minute floral characters of dry specimens. As to the inside of the seeds, their fallacious anatomical structures never perplex me; I leave them to Anatomists with the inside of roots and fibres: microscopical observations are always useless for practical descriptive Botany, as all genera and families have outward evident floral forms peculiar to each.

When plants have not been seen actually alive or dry, I quote as usual the books, authors or figures, that have imparted their knowledge; but few such plants will however be mentioned here, this being rather intended as a collection of my own observations: yet in complete monographs or revised Genera it will be needful to compare all the species and facts. It is to be regretted that our botanists too often neglect the labors of their colleagues, by not comparing all previous or proposed species: whereby they can only give us imperfect monographs.

Several authors have mistaken foreign plants of distant regions for our own. Many such are found in Thunberg, Gmelin, Loureiro, &c. that are different species from Japan, Sibiria or Anam. Decandole has recommended to compare again every plant deemed native of several remote regions, and I shall often do it.

FLORA OF NORTH AMERICA.

BOTANICAL GEOGRAPHY AND LOCALITIES.

Botanical Geography has lately been much attended to since Willdenow, Decandole and Humboldt have written upon it. Dr. Pickering alone has specially written upon that of North America, and although I do not admit of all his conclusions, nor think his map quite correct, yet he has opened the way.

The Earth is divided into botanical regions, where a peculiar growth of trees and plants are found; these regions although sometimes well defined in Islands and Physical regions, must necessarily blend in large continents near their limits.

Willdenow supposed that groups of mountains were the nucleus of these regions, and that the floras expanded around; others think that mountains often divide the botanical as well as physical regions. In North America both seem to be partly the case.

Decandole had only three botanical regions in North America, north of Mexico, the Atlantic or Apalachian extending to Florida and Missouri, 2d the Origenic or the Oregon mountains and plains of the West. 3. the Boreal common to boreal Asia and Europe. Pickering has proved that following the level of the land, the Boreal or Canadian extends South over the Alleghany mountains, while the Mexican region extends North into Texas and Arkansas.

Eaton has supposed that our Atlantic region was divided in two by the Potomac, the Northern, and the Southern that winds round the mountains to the far West including all the Western States.

These are of course exclusive of the three great regions of the Southern parts, Mexico, Central America and the Antilles.

I have rectified these views since 1832 by increasing our regions to seven; to which I have given the names of Boreal, Canadian, Alleghanian, Floridian, Louisianian, Texan and Origionian: each of these is perfectly distinct and distinguished both by physical features and peculiar Genera of plants.

✓ 1. *Boreal Region*, including the Polar region, Groenland, Iceland, Labrador, Hudson ✓ Bay and New Sibiria. This wide region, is very similar to the Boreal parts of the Old Continent, Lapland and North Siberia, forming perhaps only one wide circle around the Arctic Pole. It is the poorest of all the American Floras, with very few trees and shrubs, chiefly evergreen, and with the lower classes of plants preponderating, such as Mosses, Lichens, Algas, &c. but few Fungi. The floral season is very short, hardly three months from June to August.

2. *Canadian Region*. This forms a broad belt across the Continent including Nova Scotia, New England, Canada, the countries around the Lakes, and the vast lacustral plains of the West. It has spurs in the northern Alleghanies, the Saranac, Taconick, and Kiskatom mountains. It is distinguished by the prevailing Firs, Willows, and Birches, the Genera *Linnea*, *Diervilla*, *Parnassia*. *Rubus*

Ribes, *Coptis*, *Nemopanthes*, *Comarum*, *Caltha*, &c. and an abundance of Mosses, Lichens and Fungi, not however exceeding one half of the whole number. The floral season of five months, from May to September.

3. *Alleghanian Region*. This has for nucleus the Alleghany mountains of Pennsylvania, Maryland, Virginia, Kentucky, &c. called Apalachian south of Potomac and Wasioto or Cumberland to the West: this region winds all around East and West into the hilly or broken country. It is distinguished by the abundance of trees, oaks, radiate plants, fungi, grasses, leguminose, hypericines, with the prevailing genera *Hicoria*, *Kalmia*, *Trillium*, *Azalea*, *Vitis*, *Rhododendron*, *Hydrangea*, *Heuchera*, *Lactuca*, *Solidago*, *Rosa*, &c. the Mosses and Lichens are yet abundant, but now form only a small proportion of the whole, while the Fungi are become about one third of the whole. It is remarkable that here the trees and shrubs although yet of the same Genera as in Europe are nearly all unlike in species.— Floral season from April to October.

4. *Floridian Region*. This begins in the North by a narrow belt in the marshy and sandy Islands or Shores, pine woods and swamps of Long Island and New Jersey, widening gradually in the plains of Virginia, Carolina, Georgia, ascending the hills and south Apalachian mountains which run west into Alabama, occupying the whole of Florida, Alabama, &c. It blends in South Florida with the Antillian flora of Bahama and Cuba, in the mountains with the Alleghanian flora, and west with the Louisianian. It is distinguished by Magnolias and Pines, Palms and Yucas: the pecu-

liar Genera *Clethra*, *Fothergila*, *Passiflora*, *Chionanthus*, *Lantana*, *Marshallia*, *Xerophyllum*, *Pinkneya*, *Halesia*, *Leiophyllum*, *Hudsonia*, &c. with many species of *Ilex*, *Ludwigia*, *Rhexia*, *Viburnum*, *Lobelia*, &c. Here the Mosses, Lichens and Fungi greatly decrease, while the grasses, rushes, ferns, aroides, lilies and akin greatly increase. It is the richest of our Botanical regions in Species, and Vegetation is unceasing, there are flowers in every month, even in January.

5. *Louisianian or Missourian Region.* The actual state of Louisiana hardly belongs to this; but the ancient Louisiana is the nucleus of it, extending into the plains of Tennessee, Kentucky, Illinois, Arkansas, Missouri, and up into the vast plains of the Upper Missouri. The cradle of it appears to be the Ozark mountains. It is distinguished by the Pacan-tree, the Bowtree, the Amorphas, the *Planera*, *Cladrastis*, peculiar Pavias and Poplars; with abundance of Cacti and Ferns; but scanty Mosses, Lichens and Fungi: with the peculiar Genera *Miegia*, *Collinsia*, *Bellis*, *Leucospora*, &c. Floral season from March to November.

6. *Texian Region.* This extends over the wide plains between Louisiana and Mexico, and probably over New Mexico: the nucleus may be the Taos mountains; botanical spurs extend into Arkansas and the Colorado Valley. It is very little known as yet, but the productions are intermediate between Mexican and Louisianian, with abundance of Cactides and Canebrakes. The floral season lasts nearly the whole year as in Florida.

7. *Origion Region.* This extends over the Origion mountains and the hilly country west

of it. We do not know it thoroughly as yet, but what we know of it, is very peculiar. We may hope that Nuttall will describe it botanically. It has perhaps several divisions, the mountains, sea shores, and new Albion or new California to the South. It bears the same botanical relation to Sibiria than the Alleghanies do to Europe. It is distinguished by peculiar trees, Firs, Oaks, Maples, the singular *Garrya* tree, many species of *Ribes*, *Lupinus*, *Pentostemon*, *Cactus*, *Mimulus*, &c. with peculiar Genera *Calochortus*, *Eutoca*, *Las-thenia*, *Collomia*, *Aegochloa*, *Lewisia*, *Clarkia*, &c.—The Labiate, Hypericines, Grasses, Fungi and Mosses appear to be scanty. Liliacea abound, but the Orchides are very few. The floral season extends from March to November in New Albion, but is much shorter in the mountains and to the North.

Besides the above great Regions of this Continent, there are several other Local Regions, more confined in limits, but well distinguished by peculiar vegetation or growth of trees. The principal of these are

1. The swampy pine region, where grow the *Schubertia* and *Cupressus thyoides*, from New Jersey to Louisiana, with many peculiar water plants. These swamps are unlike marshes by being sandy and having a clear yellow water. In the dry places prevail Pines, *Hudsonia*, &c.
2. The Sandy Shore Regions all along the margin of our Sea from Long Island to Florida; *Ilex* and *Myricas* prevail, also shrubs, plants, with palms in the South. The rocky shores of the North are very unlike this.
3. The Alpine Region or Summits of High mountains, where few trees are found, while

many peculiar plants grow only there. In the Alleghanies they partake of the Canadian flora, and in the White mountains of the Boreal flora.

4. The Prairie Regions of the West, with few trees, but a profusion of fine plants, Dodecatheons, Tradescantias, Helichroas, Gentians, Radiate flowers, &c., some peculiar shrubs and hardly any Acotyle plant. There the floral season begins in March or sooner as you go South.

5. The Limestone Region of Florida, with a profusion of fine plants, Ludwigias, Rhexias, &c. and many peculiar shrubs.

6. The Limestone Region of the Ohio, forming a bassin in Ohio, Indiana and Kentucky: it has a very scanty flora, few shrubs in the woods, no Kalmias nor Vacciniums, but among trees many Asiminas and Paviass, with abundance of social grasses or congregated plants.

7. The Apalachian and Wasieto Region, or of the hills and mountains from Kentucky to Georgia: this has a distinct flora from the Alleghanies and Florida shores, many Rhododendrons, Azaleas, Magnolias, and a crowd of fine plants; many yet new in the Unaka or Iron mountains, the northern nucleus of it, as well as in the peninsula of Florida, Alabama, &c.

Besides these great localities I will add several smaller localities of great botanical interest by the numerous new plants which they have afforded me. Every botanist knows some similar place; but those which I may boast to have discovered or first well explored deserve to be commemorated. They are

1. The neighborhood of Quaker Bridge and Cedar Bridge in the centre of the Pinelands of New Jersey.—2. The neighborhood of Mullica Hill in New Jersey.—3. The sea Islands of New Jersey.—4. The source of the river

Delaware in New York at Utsiantha Lake in Oquage mountains.—The Kiskatom or Catskill mountains of New York.—6. The Dismal Swamp of Delaware.—7. Sherman Valley in the Alleghanies.—8. The Cotocton mountains of Maryland and Virginia cut through by the Potomac.—9. Valley of Loyallannah in west Pennsylvania.—10. Falls of the river Potomac.—11. Falls of the river Cumberland in Wasioto hills of east Kentucky.—12. The serpentine rocks of Chester and Maryland.—13. The Wiconisco, Tuscarora and Central mountains of the Alleghanies.—14. The summit of the Alleghanies in Maryland.—15. The Cacapon mountains of Virginia.—16. The prairies of Bigbarren river in Kentucky.—17. The Wasioto Hills and mountains of Kentucky, or Knob Hills, with their knoblicks.—18. The banks of the Wabash, and glades near them.—19. The neck of land between the mouths of Cumberland and Tennessee rivers, with the glades of South Kentucky and Tennessee.—The shores of Lake Erie near Sandusky.

I hardly need add the far famed fall of Niagara, the head and falls of the Hudson, the Taconick and Mattawan mountains, and in fact every ridge of the Alleghanies. They are all interesting botanical spots to visit; but in order to detect all their plants, you must visit them at least three times, in the Spring, Summer and Fall, or every month from May to October, and even some plants of short floral duration may then escape you. How can we then hope to know all our productions, except gradually and by repeated explorations. I have never been able to meet the *Hamiltonia*, nor *Centunculus*, nor *Parnassia* in full bloom, and many rare plants were only found once by me during 24 years of exploration.

It is a mistake to imagine that all our plants are sylvan or nemorose, because forests abound in our Continent, The plants growing underneath the shade of trees are not even the major number, and we must look for many in meadows, glades, fields, swamps, sea shores, banks of rivers, brakes, (these are peculiar places in woods or glades where ferns, canes or grasses prevail,) salt licks, rocky hills and cliffs, mountains tops, near springs and brooks.

The distribution of the plants in these localities, and the distribution of peculiar tribes

over the whole continent, would form an interesting theme, which although partly conjectural and never quite exact, might lead to philosophical reflections and deductions. Some problems remain to be solved on the subject. Why are our North American trees chiefly of European and Siberian Genera, but unsimilar in species?

Why are our shrubs still more dissimilar both in genera and species?

Why are our grasses and cyperacea so often similar in species, while the other monocotyle plants are all different?

Why are the minute and simple Acotyle plants, such as Algas, Lichens and Fungi, nearly identic in the two Continents?

Why are Mosses and Hepatica so often similar, while the ferns are less so, and offer many new forms?

Why are many similar forms offered by the tribes of Ranunculacca, Labiate, Juncides, Rosacea, Polygonides, Lysimachides, Veronicides, Borragines, Bicornes, Caryophyles, Amentacea? &c.

Why are so many dissimilar genera and species found among the Violacea, Irides, Asphodelides, Orchides, Gentianides, Apocyneae, Corymbifera, Hypericeae, Malvaceae, &c. of both continents?

Why are some families quite lacking in N. America? Such as Rutaceae, Guttifera, Protaceae, Epacrides, &c.

Why do the tropical genera so seldom extend into Florida?

Why is the vegetation of Boreal America totally unlike that of Austral America?

Why have we so few Crucifera, Umbellifera and Narcissides, compared to Europe and Africa?

Why are the two shores of North America, east and west, so unlike to each other in vegetation?

These queries and others of a similar nature may exercise the ingenuity of speculative Botanists, or amuse their idle hours; but they are facts and as such deserve our notice.

Another interesting study is that of our naturalized plants. We have so many that they appear to invade the fields and drive out the native plants in some instances; but it is by no means certain but that some deemed naturalized, were not really native. Such at least must have been the case with *Verbascum thapsus*, *Hypericum perforatum*, *Daucus carota*, *Anthemis cotula*, *Origanum vulgare*, &c. I gave a long list of the naturalized plants in my dissertation of 1808, some have since disappeared, while others have appeared instead out of gardens. But few American plants have become spontaneous in Europe, *Phytolacca decandra* and *Cenotis canadensis* are mentioned as such; but we have received several hundreds, besides some few from the Antilles and inland Decandole has properly stated that naturalized plants even when not spontaneous, but extensively cultivated in the open air ought to be added to every general flora, and Eaton has followed that advice with us.

It appears that even previous to the discovery of America by Columbus, our Indian tribes had received or imported from abroad or the South, several trees and plants. I have at least evidently ascertained historically that this was

the fact with the Maize, *Mayzea cercalis* (*Zea mays* of L) the Orange tree, the Chicasa plumb *Prunus angustifolia*, the Catalpa tree, the Peach tree, and the holy plant *Nelumbium luteum*! besides several kinds of Beans, Tobacco, Potatoes, Squashes, Pumpkins and Melons that were cultivated by our native tribes before Columbus or at least the invasion of Soto between 1540 and 1543, and subsequent French and English colonies.

The number of Genera and Species of each botanical region, and their proportion of Trees, Shrubs, Plants, Herbs, Grasses, Ferns, Mosses, Lichens, Fungi, &c. is not only variable in each, but difficult to fix, owing to the great number that are common to several blending on the limits. In general the Trees, Shrubs, Ferns and Grasses, increase in number from North to South, while the Acotyle plants diminish; but Fungi are most numerous in the Alleghanian region, by Schweinitz account of them they nearly equal the Phenogamous plants.

However all the calculations heretofore made were erroneous, depending on the peculiar knowledge of the writer and his limited views of Genera. Forster said they were only 1200! in 1771, Eaton in 1833 said exactly 5267! Torrey about 8000! I say 15000 and am nearer the truth: at least 10,000 are Vascular plants in the whole of North America, north of Mexico, with about 5000 cellular plants, whereof nearly 300 are trees or palms. Our largest Flora, the Floridian contains 6000 species at least, while the smallest, the Boreal, has hardly 1000 species, and no more exist in the Limestone region of Kentucky. The number of Genera will depend on the reformed view and correction of them.

MONOGRAPHS,

WITH NEW GENERA SPECIES AND
VARIETIES OF VASCULAR PLANTS
CHIEFLY.

ABALON Adanson. *Veratrum* L. *Helonias* Aiton and all our Botanists. *Melanthium* Walter, *Diclinotrys* Raf. meaning *two beds racemes*.

Dioical. Corolla 6petals linear, Stamens 6 filiform longer, anthers bilobed adnate, Pistillate flowers with 6 rudiments of stamens, pistil 3grooved, 3stigmas sessile reflexed. Capsule ovate 3grooved 3celled, cells with many seeds angled acute. *Habit, Caulescent, leaves scattered, flowers in long racemes.*

Adanson good name meaning *not in a ball*, was applied to the *Helonias* of L. as this Genus must certainly be divided, this good old name ought to prevail, unless mine of *Diclinotrys* is preferred. Linneus made many blunders on this plant, uniting to *Veratrum* and calling it *V. luteum* altho' the flowers are white. We know only one Sp. as yet; but it has many varieties or deviations. The divided stems are found so far apart, that no fecundation can take place. The sterile plants are more common than the others. This pistillate become fertile at a great distance from them.

ABALON (or DICLINOTRYS) ALBIFLORUM Raf. 1817. *Melanthium dioicum* Walter, *Helonias lutea*! Aiton &c. *Hel. dioica* Mx. Pursh, Elliot, Torrey, Beck, Eaton

Very smooth, stem angular, leaves cuneate lanceolate, subacute, enerve: raceme cylindrical, pedicels short, petals linear obtuse.

Varieties and deviations 1. *Pumilum*, 6 or 8 inches, leaves narrow, linear above. Mts Alleghany, rare.

2. *Sylvaticum*, large, bipedal, lower leaves broader and thick, cuneate nearly obtuse: crowded on the stem. In woods.

3. *Serpentarium*, raceme elongate flexuose like a Snake.

4. *Spicatum*, flowers nearly sessile forming a long spike, the pistillate flowers remote Kentucky

5. *Obovatum*, radical leaves petiolate obovate nervose, obtuse, stem leaves remote cuneate few obtuse. Alabama and Florida: perhaps a species, fertile flowers very remote.

Flowers white, the pistillate greenish not so crowded—found from Maine to Missouri and Floridas, in meadows, glades and woods. Root tuberose premorse, medical, see my medical flora.

Figures. Autikon Raf. 1 to 5.

ABAMA of Adanson. His good Genus was wrongly named *Tofieldia* by Hudson; but some American Sp. united to it, being distinct, I called them *Conradia* or *Leptilix* in Neog. 1825. Nuttal has named another Genus *Conradia* in 1834. I therefore restore the *Abama* for our *Tofieldias* and thus reform the characters.

ABAMA. Calix small 3dentate. Corolla 6-parted obtuse alternate longer. Stamens 6filiform on the corolla and opposite. Pistil one conical 3angular. 3 Styles spreading short, stigmas capitate. One capsule 3celled, 3valved, valves bifid above, cells with 2 or more seeds—*Habit* leaves ensiform, flowers white racemose, peduncles commonly triflore.—Con-

taining 2 Sub-genera 1. *LEPTILIX* Raf. Cauliscent, petals broader, capsule 3angular, cells two seeded—2 *TRIANTHUM* Nuttall, Stemless petals narrow, capsule globose, cells with many terete caudate seeds,

TOFIELDIA Subgenus *PALTRIMA* Raf. Differs from *Abama*, by petals equal, stamens longer subulate, dilatated at the base. Styles none or very short, stigmas sessile or nearly so, flat, 3 distincts pistils and capsules, gibbose, opening inside, few seeds angular curved. *Stemless flowers almost spiked*. This applies to our 2 species: the European are, *T palustris* & *borcalis*. see *Tofieldia*.

NARTHECIUM Smith. No calix, corolla or perigone 6parted spreading persistent. Stam. 6 hirsute, pistil one 3angular, one style stigma 3dentate. Capsul triangular 3celled many seeds caudate. Type *N. ossifragum* and one American Sp.

Therefore the *Abama* with the capsule of *Narthecium* has the calix of *Tofieldia*: the *Narthecium* of Jussieu which is the *Tofieldia* has 6 pistils, stigmas and capsules. Decandole ascribes to *Tofieldia* a capsule with 3 or 6 cells! much confusion arose from the rarity of those plants and incomplete descriptions.

1. *ABAMA* (*Leptilix*) *SCABRA* Raf. *Tofieldia pubens* Elliot, *Melanthium racemosum* Walter. Stem naked above glandular rough, leaves ensiform acute smooth, upper small, peduncles as long as the flowers 2 to 4 fasciculate, capsule 3gone. In Carolina and Alabama wet pines. Root perennial tuberose.

Stem. 1 or 2 feet, flowers green tipt with purple, estival, petals lanceolale and obovate.

2. *ABAMA* (*Triantha*) *PUBENS* Raf. *Narthe-*

cium Mx. *Anthericum caliculatum* Gronovius. *Tofieldia pubescens* Nuttall &c. Scape pubescent raceme oblong interrupted, capsule globose, leaves ensiform—From Delaware to Carolina, rare; flowers greenish white, petals linear cuneate. Found in Virginia by me. Figure of both Autikon 6 and 7.—

The other 2 species called *Narthecium* by Mx. *Tofieldia* by Persoon, and all our botanists, are unknown to me; but very distinct, and perhaps each the type of another subgenus, since they appear to differ more by the flowers than the leaves.

3. *A. PUSILLA* Raf. smooth, leaves very short, scape filiform, flowers few nearly sessile, *calix separate from the corolla*, capsule globose.—Lake Mistassin. Subgenus *DESMIPUS* Raf.

4. *A. GLUTINOSA* Raf. Glutinous, stemless, capsule ovoidal double of corolla.—Lake Mistassin. Perhaps a *Leptilix*.

ABBOTIA Raf. very distinct from *Triglochin* by 3 Stamens only, more akin to *Tristemon* or the triandrous Sp of *Juncus*. See those Genera. Named after Abbot the Botanical and entomological painter.

Calix or perigone simple 3 or 4-leaved, membranous, deciduous. Anthers sessile, commonly 3 seldom 1 or 2. Pistils 3 or 4 cohering. Stigmas sessile glandular cleft. Capsules 3 or 4 gibbose one seeded, united by spongy membranes like false cells (Elliot)—Stemless, leaves linear, flowers racemose.

1. *A. FILIFORMIS* Raf. *Triglochin triandrum* Mx. Elliot and all our Botanists—Leaves filiform, equal to scape, flowers clustered on the spike and on short pedicels, capsules gibbose half connected.—In Carolina and Florida in

marshes. Scape terete 6 inches, flowers oft with a fourth part.—Figures. Autikon Raf. 8—Ic. N. Sp. 1. Seen dry.

2. *A. PALUSTRIS* Raf. *Triglochin palustre* L &c. Leaves linear shorter than scape, raceme slender, flowers remote erect, capsules connected linear equal to pedicels—Found on Lake Erie, pedal, leaves very narrow obtuse, scape terete—Figure Autikon Raf. 9. Seen alive.

3. *A. PUMILA* Raf. *Triglochin barrelieri* Loesel flora gallica, not in Persoon nor Decandole—Leaves linear thick equal to scape, raceme 4 or 5 flore, capsules connected linear-oblong longer than pedicels—Found on Lake Champlain, annual, 2 or 3 inches high, leaves nearly convex beneath, obtuse.—Fig. Autikon Raf. 10. Ic. N. Sp. 2. seen alive.

ABIES. This good Genus of fine trees distinguished by Tournefort, Adanson, Jussieu and all the correct botanists, was wrongly united to *Pinus* by Linneus. The Firs are not Pines! the habit is very different, and Jussieu has given a long description of the peculiar fructification. The region of Oregon has afforded many new Firs, well described by Lewis in 1812 and in Atlantic Journal.

1. *A. TRIGONA* Raf. 1832. Bark and branches scaly, leaves densely scattered, petiolate trigone acuminate and stiff.—In Oregon, gigantic, 200 to 300 feet high, trunk 40 feet around, leaves 3-fourths of an inch long, one tenth wide. *Gigantic Fir*.

2. *A. HETEROPHYLLA* Raf. 1832. Bark rimose, leaves distichal petiolate, very unequal, sulcate above, glaucous beneath; cones terminal ovate flexible.—In Oregon, reaching 180

feet, leaves one fourth to one inch long, but all one twentieth wide.—*Oddleaf Fir*.

3. *A. AROMATICA* Raf. 1832. Branches bullate balsamiferous, leaves densely scattered forming 3 rows, sessile lanceolate obtuse, flexible sulcate and shining above, gibbose beneath.—In Oregon, reaching 100 feet, blisters on the branches filled with a fine aromatic balsam, leaves very small one eighth of an inch long, one sixteenth wide. *Aromatic Fir*,

4. *A. MICROPHYL*A Raf. 1832. Bark rimose, branches not bullate, leaves densely scattered forming 3 rows, sessile acute sublanceolate.—In Oregon, reaching 150 feet high, like the last, but yielding no balsam, leaves still more minute, only one-twelfth of an inch long, one 24th wide, wood white and tough. *Scaly Fir*.

5. *A. MUCRONATA* Raf. 1832. Bark scaly, branches virgate, leaves scattered very narrow, rigid and oblique, sulcate above, pale beneath: cones ovate acute, scales rounded nervose mucronate.—In Oregon, reaching 150 feet, leaves subbalsamic, one inch long, one 20th wide, cones very large two 1-2 inches long. *Large cone Fir*.

Var. *palustris*. Only 30 feet high, branches spreading. In swamps.

6. *A. FALCATA* Raf. 1832. Bark scaly, leaves in 3 rows, 2 rows upright, one row declinate falcate, all linear lanceolate with trigone petioles: cones fusiform obtuse at both ends.—On the sea shore of Oregon, rising only 35 feet, leaves three 4ths of an inch long, one 5th wide. *Sickle Fir*.

Of the Atlantic Firs we have 7 or 8 species, all called *Pinus*!

7. *A. TAXIFOLIA* Raf. *Pinus*, Lambert and Eaton. *Yew leaf Fir*.

Var *patula* Raf. Autikon 11. Branches spreading, leaves obtuse, entire hardly glaucous.—Cumberland mts. *Spreading Fir*.

8. *A. BALSAMIFERA* Michaux. *Balsam Fir*.

9. *A. FRASERI* Raf. *Pinus* Pursh. *Double Spruce Fir*.

10. *A. CANADENSIS* Mx. *Common Spruce Fir*.

11. *A. NIGRA* Raf. *A. denticulata* Mx. *Pinus nigra*. Aiton. *Black Spruce Fir*.

12. *A. RUBRA* Raf. *Pinus* Lambert. *Red Spruce Fir*.

13. *A. ALBA* Mx. *Pinus* Lambert. *White Spruce Fir*. All these dwindle to dwarf varieties on the White mts. and in North Canada.

ABRUS. This tropical Genus extends to Florida; but our Sp. has not been described: the *A. precatorius* is said to have 3 varieties with red, white and yellow seeds. They must be again compared, also, the Asiatic, Antillian and Floridan plants. Linneus once mixt those plants with the *Glycine*.

ABUTILON. Tournefort, *Malvinda* Dillen, *Sida* Linneus &c. This good old Genus hardly preserved except by Adanson, is perfectly distinct from *Sida* by the *many truncate and 3 seeded capsules around a hollow* in a stellate and campanulate form, 10 to 20 with as many styles, the *Sida* having only 5. There are many species of it; not yet well distinguished, perhaps all the multicapular *Sidas* of Linneus belong to it, or to the Genus *Dia-desma*.

1. *A. MOLLISSIMUM* Raf. *A. cordatum* Med. flora. Autikon. 12. Soft like velvet, leaves orbicular cordate acuminate, erose crenulate, no long petiols; peduncles axillary pauciflore

short, capsules 12-15 hairy bicornate 3 seeded. —*Sida abutilon* L. and all the Botanists, but with many varieties, perhaps species? all annual with small yellow flowers.

Var *palustris*. Stem 2 to 6 feet, leaves crenulate, peduncles triflore, 2 sterile. Swamps of Carolina. Vernal. Elliot.

Var. *rudérale*. Stem 2 to 6 feet, leaves nearly entire, peduncles 3-5flore. Common among rubbish, in woods and old dry fields from New England to Kentucky. Estival.

Var. *uniflorum* Raf. Stem pedal or less, simple, few leaves, nearly entire, peduncles uniflore, or only one flower. In waste grounds, rare.

Whether our American varieties are identic with those of Europe, Sibiria, India &c. is doubtful: the European has stem 5 feet high, large entire leaves, peduncles uniflore, calix canaliculate &c.

2. A. DECARPUM Raf. *Sida abutiloides* Jaquin. *Lavatera ! Americana* L.—Tomentose, leaves cordate acuminate, crenate, peduncles uniflore as long as petiols, 10 capsules 3 seeded. —In South Florida, Stem 3-4 pedal. Hardly different from some of the varieties above, but capsules less on longer peduncle. Mistaken for a *Lavatera* and deemed fruticose by Linneus, a double blunder.

3. A. CRISPUM Raf. *Sida crispa* L. &c, appears to differ from the others by white flowers. a multilocular inflate cristate fruit: certainly no *Sida*: Michaux and Elliot did not see it, must be examined again. It probably belongs to *Cristaria*. Leaves oblong cordate, acuminate and crenate. In Florida and Bahama.

The *Sida rhombifolia*, *S. stellata*, *S. virgata*, *S. cardanisca*, must belong to *Diadesma*, which see. The authors enumerate 120 species of this Genus, improperly blended. *Anoda* and *Cristaria* of Cavanilles have been properly separated; while *Napea* of Linneus has been very improperly united to it. Other Genera are hidden in the jumbled *Sidas*. The true *Abutilon* has calix not 5angular, nor petals oblique as in *Diadesma* and *Sida*.

ACAKIA Adanson who spelt *Akakia*, but misspelt *Acacia* by Willdenow, which being pronounced *Acasia* becomes blended with *Cassia*! One of the many genera blended with *Mimosa* by Lin. We know already 14 Sp. of *Mimosas* in N. America, which may as well be enumerated here at once. They are rare plants in herbals, because difficult to dry, the leaves falling in the process. Eaton has only 7 species.

1. *ACAKIA FARNESIANA* Willdenow &c. In Louisiana, native.

2. *A. JULIBRISIN*. W. native of Asia, but naturalized in Carolina, Virginia and as far north as Philadelphia in gardens. Beautiful tree 20 to 25 feet high, splendid when in bloom. Pods flat as in *Darlingtonia*, probably a particular genus. *Julibrisin arborea* R.

3. *A. LUTEA* Leavenworth, (Eaton.) In Alabama, pods ovate, differ from *farnesiana* by unarmed, folioles numerous and pod ovate.

4. *A. COOLEYI* Eaton. *A. anomyma*! Torrey W. pl. 106. Leaves bipinnate, very irritable, flowers capitate white, legumes long linear smooth. In Arkansas.

ACAKIA has the pods unilocular and bivalve, strait. *Amosa* of Necker.

MIMOSA has pods multilocular by transverse partitions. 2. Sp.

DARLINGTONIA Dec. pods unilocular bivalve, flat often falcate. 5 Sp.

SCHRANKIA. Wild. pods unilocular quadri-valve. 2 Sp.

5. **MIMOSA PUDICA** L. which is said by Bartram to grow spontaneous in Louisiana, deemed a weed; but perhaps it is another Sp. see fl Lud 445.

6. **MIMOSA CHIONACANTHA** Raf. fl. lud. 331. *M. eburnea* Robin. Perhaps not even a *Mimosa*, altho' the fruit is similar; but the flowers are different.

M. pudica typical Sp, has cal. trifid, no corolla, 3 or 4 stamens; but this Sp. cal. and corolla irregular, many stamens: therefore type of another Genus **EBURNAX**, Raf. fruticose cespitose aculeate, spines geminate divergent strait snowy lucid, heads of flowers globose, pods strait terete glutinose.—Sandy fields of Florida and Louisiana.

7. **DARLINGTONIA GLANDULOSA** Dec. *Mimosa* Mx. *Acacia* W &c. Pods strait.

8. **D. ILLINOENSIS** Dec. *Mimosa* Mx. *Acacia brachyloba* W. Mg. &c. The *Acacia miamensis* of Don & Mg. Cat, is perhaps this Sp. also, and their A, *divaricata* of Carolina the *glandulosa*; both undescribed, but made out distinctly by Mg. I found at the falls of the Cumberland R. in Kentucky, one of these, but without flower nor seed in September.

9. **D. INTERMEDIA** Torrey W. pl. 107, good description, copied by Eaton, on Arkansas R.

10, **D. BREVIFOLIA** Raf. Herbaceous, inerme, stem 4angular striated, leaves very short bipinnate by 3 pairs of 10 to 12 folioles oblong

acute pubescent ; pods unequal linear contorted, end hooked.—In West Louisiana and Texas, small plant, minute leaves and flowers in peduncled head. Figure in Autikon rare. 14.

11. *D. VIRGATA* Raf. fl. lud. 444. *Acacia*. *Mimosa Virgata* Bartram. Stem erect, branches virgate, leaves bipinnate ; pods oblong on long peduncles, and lunate broad flat contorted.—On the shores of Florida, Herbaceous perennial, flower of a pale greenish yellow. Omitted by all our botanists.

12. *SCHRANKIA* Wild. Nuttall wrongly says only one species known ! Eaton joins to it the *M. sensitiva* of the hot houses ! the type is the *M. quadrivalvis* of Linneus, which includes several Sp. of which I give two.—

13. *S. UNCINATA* W. *M. intsia* Walter. *M. horridula* Mx. Prickles hooked, branches angular, leaves bipinnate, peduncles geminate, pods oblong (Elliot) linear terete (Mx.) prickly—Virginia to Florida. Well described by Elliot, flowers purple, vernal.

14. *S. MEXICANA* Raf. *M. 4-valvis* L. Houston fig. Prickles hooked, branches quadrangular, leaves bipinnate, partial ternate, peduncles axillary, pods linear subulate 4 angular prickly.—In Mexico sea shores, and probably in Texas.

ACALYPHA of Linneus, *Cupameni* of Adanson. Genus well known and natural, well described by the authors, who have adopted the good linnean name, rather than the malabaric name of Adanson. It is a tropical and Asiatic Genus extending to North America. Persoon has 38 Sp. (Linneus had only 5) and there are more, since only two are admitted of N. A. out of the whole. I have ascertained 9 at

least. Being an unsightly Genus, it is neglected by the Botanists; but many other Sp. exist perhaps in Florida and the South: few of them know well their 2 species, and blend them continually in herbals, having united 3 species in *A. Virginica*. All have alternate leaves.

1. *A. VIRGINICA* L. or *A. CRENULATA* Raf. Stem erect, nearly simple, pilose; leaves longer than petiols, oblong-lanceolate, crenate obtuse pubescent punctate: flowers axillary few monoical, shorter than petiols, involucre crenate.—From New England to Carolina. Pedal and annual, leaves small uncial. Seen alive. Estival. Capsule hispid.

Figures. Autikon. Raf. 21.

2. *A. BREVIPES* Raf. Hardly pubescent, stem erect angular simple; leaves on very short petiols, narrow lanceolate, acute, nearly entire: flowers axillary, few monoical, involucre laciniate.—N. Jersey to Alabama and Kentucky. Annual 3 to 6 inches high. The *A. virginica* of many Botanists. Seen alive since 1804. Estival, capsule hispid.

Figures. Autikon. Raf. 22.

Var. *Linearis*. Leaves nearly linear and entire.

Var. *pubescens*, stem and petiols hairy, leaves lanceolate, *A. Virginica* Michaux.

3. *D. DIVARICATA* Raf. Pubescent, branches opposite divaricate; leaves on short petiols, ovate obtuse crenate; flowers axillary few monoical, equal to petiols, involucre sessile, laciniate. Virginia, Kentucky &c. annual spreading 1 or 2 feet, Estival, seen alive.

A. Virginica of some Botanists. Capsule hispid.

Figures. Autikon Raf. 23

4. *A. RHOMBOIDEA* Raf. nearly smooth, stem virgate nearly simple; leaves on long petiols ovate rhomboidal, acute, serrate; Involucre pedicellate, laciniate, shorter than petioles, flowers monoical caps. hispid.—Pennsylvania to Ohio, Alleghanies &c. annual, estival, pedal.

A. caroliniana of Michaux and all our Botanists except Walter and Elliot. Eaton says Darlington was the first to find it North; but Muhlenberg and I found it in 1802, deemed then the same as the next.

Figures. Autikon Raf. 24. Lamark tab 780.

5. *A. CAROLINIANA* Walter, Elliot. Stem strait hairy, leaves on long petiols, oval lanceolate 3 or 5 nerved, pilose, acuminate, serrate, base subcordate, spikes axillary and extra, monoical, involucre sessile laciniate, capsules echinate.—Carolina and Florida. Annual, Estival. Leaves large 2 or 3 inches, involucre small, spikes elongate 2-4 inches: totally different from last, this might be called *A. echinata*. Elliot was doubtful of the Genus.

6. *A. URTICIFOLIA* Raf. Stem erect angular grooved smooth; leaves ample ovate acute on long pubescent petiols, base acute, serrate, trineve with a few hairs: flowers axillary monoical, 2-3 involucre laciniate or palmate, ciliolate, capsules scrobiculate or dotted, smooth. In West Kentucky and Tennessee, discovered in 1818. Sesquipedal, estival, annual. Near the last, but smooth, leaves with only a few adpressed hairs above, flowers not in spikes, few, and capsules with sunken dots. Seen alive.

Figure Autkon Raf. 25.

7. *A. DIGYNEIA* Raf. fl. Louis. 369. Stem herbaceous ramose tomentose, leaves petiolate, oblong lanceolate, dentate, villose: involucre

flat ciliate, 2 pistillate flowers on the peduncle of the staminate flower.—In Louisiana, stem 2 feet, flowers axillary only 3, anthers almost in a spike. No figure.

8. *A. FRUTICULOSA* Raf. fl. Louis. 368. Shrubby, branches divaricate, rufous tomentose, leaves petiolate ovate dentate: involucre involute unequally dentate, a single pistillate and staminate flowers.—In Louisiana, stem 2 feet, with many slender branches, flowers axillary geminate. No figure.

These two last species neglected by our Botanists, are very distinct and approximate to the tropical species. Linneus states his *A. virginica* to grow in Jamaica and Ceylon, quoting the figures of Brown and Plukenet; they must apply to other kinds, which may be called

9. *A. JAMAICENSIS* Raf. Fruticose, leaves ovate-lanceolate longer than petiols, serrate, scabrous: Spikes axillary, involucre multifid (Lin.) but cordate crenate (Brown)—In Jamaica and perhaps in Florida, shrub 4 to 5 feet high. See Brown, Lunan and Jamaica authors. Very different from all ours, perhaps 2 Sp. there.

10. *A. ZEYLANICA* Raf. In Ceylon, certainly more distinct yet, but I have no materials at hand on it.

ACANTHUS of Lin. Genus foreign to N. America, the following doubtful species may be a *Pedicularis*.

A. RUBENS, Raf. fl. Louis. 104. Leaves inerme soft, clasping, broadly sinuate.—In Louisiana near New Orleans! *A. mollis* Robin. Stem 3 to 4 feet, flowers pale red.

↳ Var *Minor* smaller, leaves deeper sinuate, flowers remote

ACER ; pronounce *Aker* not *Aser*. Of the useful maples, I hardly need give a Monograph, as they are so well known, and the *G. Negundium* is now separated, except by Eaton and such incorrect botanists. Yet some Sp. are not yet well settled, Nuttall unites the *A. glabrum* with *A. circinatum* Pursh: the *A. coccineum* Mg. is only a variety of *A. rubrum*; many Sp. are blended as *A. sacharinum* because they produce sugar.

A singular blunder has prevailed for this Genus. All trees are feminine in Latin, whatever be the gender of the generic name: thus we say *Quercus alba*, *Salix nigra*, *Liriodendron tulipifera* &c. but in some neutral names like this we make the species neutral also! I never could find a botanist or latin scholar to explain the cause or propriety of this contradiction.

See Michaux, Elliot, Nuttall, Eaton &c. for the species; but I may present a better view of them divided into six sub Genera.

I. EVOTRIUM Raf. Polygamous. Calix 5 fid, petals 5, stamens 8, fruits smooth flowers in racemes, leaves lobed, *A. Striatum*, 2. *A. spicatum*.

II. SACHARODENDRON Raf. Polygamous. Cal. 5fid bearded, no petals? Stamens 6 to 10, fruits smooth, flowers fasciculate, leaves lobed. 3. *A. sacharinum*, 4 *A. barbatum*, 5 *A. nigrum*, 6 *A. circinatum* Pursh *glabrum* Torrey.

III. CLINOTROX (old name) Polygamous. Cal. petaloid smooth 8-12 parted, no petals, stamens 4 to 6, with a globular gland at the base of each, fruits smooth, flowers aggregate with a scaly involucre, leaves lobed. 7. *A. rubrum*, and the Var. *Coccineum* Mg.

IV. ERIOCARPUM Raf. Polygamous. Cal. mem-

branous 5 toothed, no petals, stamens 4 to 6 without glands, fruit hairy, flowers glomerate, leaves palmate or angular. 8 *A. dasycarpum*, and a N. Sp. from Oregon.

9. *A. VIRGATUM* Raf. many stems and branches virgate, leaves on long petiols, rounded angular crenate acute.—Mentioned by Lewis and Clarke as a small white maple, bark white: perhaps another Var of *A. circinatum*, but our white maple is the *dasycarpum*. Seen dry, without flowers.

V. NEGUNDO or NEGUNDIUM Raf. 1808. Dec. Beck. Dioical, without complete flowers. Cal. minute 4-5 dentate, no petals, anthers 4 to 5 sessile, fruit smooth, flowers racemose pendulous, leaves pinnate or ternate. 10. *A. or N. fraxinifolium*, leaves ternate and pinnate, folioles unequally dentate, the last trilobed.—11 *A. or N. TRIFOLIATUM* Raf. fl. Tex. 8. leaves ternate, folioles ovate oblong entire, smooth, acute, the last 3dentate.—In Texas and Arkansas, branches green, flowers 4androus. Seen dry. figure Autikon rare. Ic. N. Sp.—12 *A. or N. lobatum* Raf. leaves nearly simple, triparted or trilobed, sublaciniate. Apalachian Mts. Seen alive. figure Autikon rare. Ic. N. Sp.

VI. SPHENDAMUS Raf. (old name) Dioical, Cal. 6 parted, no petals, stamens 9, long hairy, fruits hairy? flowers in erect racemes, leaves digitate. 13. *A. macrophyllum* Pursh. leaves digitate hairy beneath, segments trilobed, repand dentate. In Oregon, and another N. Sp. or Var. 14. *A. PALMATUM* Raf. leaves wide palmate, 5parted, smooth, segments 3 or 5 fid, lobed and dentate. On the R. Oregon. leaves on long petiols equal to leaves, they are broader than long, 12 inches wide, 8 long. A tree 40 feet high. Seen dry. fig. Ic. N. Sp.

By Hooker account the *Sphendamus* or *A. macrophyllum* has Cal. smooth oval, 5 petals obovate, 10 Stamens hairy at base, flowers yellow fragrant. He has properly described the *A. circinatum* and it must form a 7th Subgenus, as follow.

VII. **ANTADENIUM** Raf. flowers corymbose trioccal polygamous Cal. 5fid hirsute, 5 petals crisp linear, carnosose disk, 5 glands opposite to petals and one pistil in fertile flowers, 8 Stamens and 2 pistils in sterile flowers.

Our Maples present then many anomalies in their flowers, and are only united by their two winged fruit. They form now a peculiar family, akin to the *Fraxinus*. These Sections will soon become as many Genera of it; they must be compared with the European and Asiatic Sp.

ACER-OTIS Raf. 1817 meaning *Ears without horns*, bad because compound of 2 other genera, a tree and a bird: Same as **ACER-ATES** Elliot 1820 (no horns) quite as bad, derived from *Acer*, and there is another *Aceras* besides among Orchidea, 3 mistaken names! I have changed mine to *Otanema*, which See

ACHANIA Aiton and correct botanists, *Malva-viscus*! of Cavannilles, Nuttal and other incorrect botanists, as if a Sp. of *Malva* Differs from *Hibiscus* by berry 5seeded. Not in Eaton.

1. **A. MALVAVISCUS** Ait. *Hibiscus do* L. Louisiana and Texas.

2. **A. MOLLIS** Ait. In Florida. Both seen alive in gardens.

3. **A. FLORIDANA** Raf. *Malva-viscus do* Nuttal. Herbaceous, hirsute, leaves cordate ovate crenate in short petiols, peduncles nod-

ding.—In Florida, small leaves and flowers, near to *A. pilosa*. Seen dry.

ACHILLEA. Well known natural Genus, which has been increased to 7 N. American species.

1. *A. MILLEFOLIUM*. L. the common yarrow or milfoil, see my medical flora : our American Sp. is not introduced, it has been deemed peculiar by some botanists, having stronger medical properties, and it has produced several varieties, that are becoming species ! All in Autikon.

Var. *rosea*, with rose colored flowers.

Var. *carnea*, flowers of a pale flesh color.

Var. *pumila*. Dwarf, 4 to 6 inches high.

Var *tenuifolia*. Leaves nearly glabrous, with slender well divided segments, almost pectinated.

2. *A. GRACILIS* Raf. fl. texensis 12. Stem slender stiated, leaves remote, narrow smooth, lower petiolated recurvate, pinnate, folioles narrow laciniate, corymb small glomerate.—In Arkansas and Texas, only 6 inches high, fl. white.

3. *A. PTARMICA*, doubtful, seen by few botanists, undescribed : perhaps same as 7.

4. *A. SETACEA*, near *gracilis*, differs by leaves mucronate pilose.

5. *A. LANULOSA* Nuttall. *A. tomentosa* Pursh not Willdenow nor Hooker. Silky, segments crowded, corymb composite. In Missouri and Oregon.

6. *A. ASPLENIFOLIA*. Pursh, known by obtuse segments.

8. *A. MULTIFLORA* Hooker. *Ptarmica* Richardson. Stem erect, leaves long lanceolate serrate pinnatif, segments serrulate, nearly smooth, corymb composite, rays very short. In North Canada. Is it the *ptarmica* of Newyork ?

ACHLYS Dec. Hooker. *Leontice triphylla* Smith, certainly a peculiar genus. Cal. o. Cor. o. Many naked stamens around a naked pistil, anthers bilabiate bilobe, stigma sessile oblique concave, fruit monosperm. Put by Hooker next to *Leontice*, by Dec. next to *Jeffersonia*, unlike either except in habit and anthers. Nearer to *Diphylleia*, differing by the many naked stamens.—*A. triphylla* Dec. H. Radical leaves with long petiols, 3 sessile folioles flabellate, reticulate, repand sinuate: Scape with a spike of white flowers. Perennial. N. W. America.

ACHRAS SAPOTA L. said to grow in South Florida and Texas: see medical flora vol. 2

ACHYRANTHES, Our Sp. of this Genus appear to form a peculiar Genus indicated by Elliot, see *Steiremis*. The genera akin *Gomphrena*, *Illecebrum*, *Celosia* are yet in great confusion like this; see *Adoketon*, *Phylepidum*, *Xerandra* of mine, and *Philoxerus*.

The *A. repens* of Elliot was a *Gomphrena* of Linneus.

ACMELLA Richard. **HELEPTA** Raf. Neog. 33. Differs from *Heliopsis* by Perianthe simple, or nearly so. The seeds in both are obovate, and truncate without teeth: leaves opposite, flowers peduncled, autumnal, yellow rays, disk blackish.

I. Subgenus. **ERPOTA**, Raf. Perianthe 12 segments, rays 5 to 12 tridentate, seeds compressed, sub4gone, chaff obovate. Creeping plants annual?

I. **A. REPENS** Persoon &c. *Anthemis* do. Walt. *Spilanthus* do, Mx. Well described by Elliot. Creeping, leaves oval-lanceolate toothed, trinerve, peduncles long axillary terminal, rays about 12.—In Carolina.

2. *A. NUTTALIANA* Raf *A. occidentalis* Nutt. Creeping, leaves ovate crenate petiolate hardly trinerve, rays 5 to 8.—Louisiana, perianthe minute. The *occidentalis* of South America has the seeds terete, 5 rays, leaves large trinervate serrate, stem erect, 5 entire rays: it was the *Anthemis trinervis* of L.

II. Sub. G. HELEPTA. Perianthe equal segments 10 to 12, rays 6 to 12, narrow, nearly entire, seeds 4 gone not compressed, chaff setaceous—*Plants erect often simple and uniflore, leaves petiolate trinervate, Perennial.*

3. *A. NUDICAULIS* Raf. stem sulcate smooth, naked above uniflore, leaves ovate acuminate serrate, base acute, rays 6 to 8 obtuse.—In Cumberland Mts. and East Kentucky with all the following. Stem bipedal, leaves roughish above, pale beneath, flower large. Seen alive.

4. *A. FLAVICAULIS* Raf. Stem smooth striate yellowish foliose, leaves ovate acute serrate, flower nearly sessile, perianthe segments ovate obtuse, rays 10 to 12 obliqually retuse.—Bipedal, leaves not pale beneath, flower large. Seen alive.

5. *A. PARVIFOLIA* Raf. Stem smooth sulcate, leaves crowded at the base. small ovate acute serrate, flower peduncled, rays 6 to 8 retuse notched.—Pedal, small leaves and flower, segments of perianthe lanceolate acute as in nearly all. Seen alive.

6. *A. LANCEOLATA* Raf. Stem rough sulcate foliose, leaves lanceolate acuminate serrate, flower subsessile, rays 6 to 8 obtuse.—Over one foot, leaves thin pale beneath, flower middle size with broader rays. Seen alive.

I have united these plants to *Acmella*, altho' the habit is very different from the others, near-

er *Heliopsis*. These 4 figured in my Autikon 11 to 14.

ACMISPON Raf. Atl. jour. meaning *point hooked*. Differing from *Trigonella*, *Bucerrates*, *Platycarpus* and *Lotus*. Even Torrey said that it ought to be a genus, and Bentham unites it to *Hosackia*.

Calix deeply 5 cleft, vexillum and wings equal, pod stipitate smooth strait, compressed, swelled and hooked at the point. *Leaves ternate, Silky*.

1. *A. SERICEUM* Raf. *Lotus* do. Pursh, *Trigonella americana*, Nut. T. E. well described by Nuttall, flowers axillary, solitary, subsessile. From Missouri to Carolina, rare, probably 2 sp. blended: both seen dry.

2, *A. MULTIFLORUM* Raf. peduncles axillary and terminal, multiflore nearly in a spike or umbel. Missouri. Is not the Carolina plant this? or a peculiar sp! Which is the *Hosackia purshiana* of Bentham? The true *Hosackia* have pinnate leaves, pods cylindrical, keel rostrate instead of the pods.

ACNIDA of Linneus. Genus better known since Michaux corrected account, copied by all our botanists except Elliot. But the original *A. canabina* L. is not known to our botanists; they all mean that of Michaux. Linneus described his species as follow.—*A. canabina*. Root flexuose, stem white, petiols purplish smooth, leaves *pinnate velutine, folioles 5 to 7 narrow acute*, spikes axillary foliose, fl. fem. cal. 2phyl. 5 styles. In Virginia salt marshes. Such a plant with pinnate leaves cannot be of this Genus. Could Linneus have described the leaves of another plant mixt with *Acnida* flowers? Could this be over again his *Datisca hirta* found by no one since? Sir James Smith

the possessor of the Linnean herbarium has not mentioned this curious fact.

1. *A. OBTUSIFOLIA* Raf. *A. cannabina* Mx. and all his copists. Stem angular solid, leaves on long petiols, lanceolate, base acute, end obtuse, panicle of spikes foliose, bracts subsessile capsules or fruits smooth with acute or obtuse angles, (leaves lanceolate, capsules smooth with acute angles Mx.)—In Virginia. As found further North, it has broad lanceolate leaves, obtuse entire, stem solid from 3 to 5 feet high, pyramidal, panicles foliose. Raf. Autikon. 4. Seen alive.

Var. *retusa*. leaves notched at the end.

Var. *pumila*. Stem pedal simple, leaves lanceolate.

Var. *procera*. Stem much branched, 5 feet high.

2. *A. SALICIFOLIA* Raf. 1817. Stem solid, angular above, leaves on long petiols, narrow lanceolate mucronate, panicles foliose, capsules granular 5 unequal angles obtuse tuberculate.—From Long Island to Ohio near streams. Stem annual 2-4 feet high, leaves like willow.—Raf. Autikon 5. Seen alive.

3. *A. RUSOCARPA* Mx tab. 50. Stem fistular angular lofty, leaves on short petiols, acute, oval lanceolate, capsules rugose with obtuse angles. The place of growth not mentioned, stem thick, 6 to 8 feet high, leaves acute at both ends.

4. *A. ELLIOTI* Raf. *A. cannabina* Elliot. Stem subfistular, slightly angular, leaves on long petiols, ovate lanceolate, subcrenulate, acute; panicle naked, capsules with 3 to 5 angles obtuse or acute, slightly rugose.—Banks of streams in Carolina and Florida. Stem 4 to 8

feet high, leaves 2 to 5 inches long, petioles 1 to 3 inches. The only sp. found by Elliot who was doubtful about it.

ACONITUM. This singular natural genus of all the botanic writers, is far from being well understood: we see by Decandolle and Smith that many doubtful species exist! and that our *A. uncinatum* is a triple species! many kinds grow in Oregon as in Siberia, and I am able to present some of them.

A. UNCINATUM L. Smith. Elliot. Stem nearly twining downy, leaves smooth, base truncate, 3 to 6 lobes 3dentate, 3nerve acute, flowers clustered, pedicles ramoses lax downy, 2 oblong bracts, hood unguiculate convex rostrate, wings round hairy 3 to 5 capspules.—This is the original linnean sp. described by Smith in Sup. to Rees Cyclopedia, from the linnean herbarium, and the specimen sent by Bartram, collected in the Alleganies, not near Philadelphia as stated by L. Smith quotes the figure of Curtis Mag, 1119. The flowers are large violet color. known to few botanists. The description of Elliot appears to agree.

2. **A. SCANDENS** Raf. Stem climbing very lofty, leaves trifid, flowers small in axillary panicles—At the peaks of Otter in Virginia, merely indicated by Pursh as a variety, but quite distinct: growing 9 feet high.

3. **A. FLEXUOSUM** Raf. Smooth, stem erect flexuose, leaves palmate 3 or 5fid, lobes rhomboidal lanceolate acute, hood conical rostrate—High Mts. Unaka of Carolina, flowers blue. *A. uncinatum* of Michaux and Eaton.

4. **A. TRUNCATUM** Raf. Stem erect flexuose smooth multiflore, leaves glaucous beneath, broadly truncate at the base, trilobe, lobes ob-

long acute, entire or bifid or 2-4 serrate peduncles divaricate ebracte 2-4 flore, hood convex lower petals ciliate outside—In West Kentucky and Illinois, pedal, upper leaves nearly sessile, lobes nearly entire at right angle, flowers small on pedicels, violet purple. Seen alive. Autikon 3. Perhaps the real type of *A. flexuosum* and *A. divergens*.

5. *A. DIVERGENS* Raf. Smooth, stem nearly twining with divergent branches, leaves coriaceous deeply trilobed, flowers terminal 3 to 4, hood conical, spur inclined twisted, capsules 3—In mountain swamps of the Alleghanies, flowers large purple, leaves with 3 equal lobes—*A. uncinatum* Dec. Torrey, Beck. *A. volubile* Muhlenberg.

6. *A. CORDATUM* Raf. Smooth, stem erect flexuose, nearly simple; leaves on long petioles cordate palmate, 5 lobed, clefts acute, lobes unequal oblong broad and bifid or trifid acute mucronate: flowers terminal on long pedicels 2 to 5, hood convex conical, petals elliptic, capsules 3—In Ohio and Kentucky in rich woods; about one foot high, flowers large deep blue: very rare. Undescribed till now, sent to Europe by me as the *A. uncinatum* of my florula Kent. Seen alive 1818.

Var. *Biflorum*, semipedal, 3 leaves, 2 flowers. Cumberland Mts. Figures, Autikon rar. 1—Icones n. sp. 1.

7. *A. NAPELLUS* L. Said by Muhlenberg to grow in Virginia, and by Hooker to grow in Oregon. Bartram found it in his travels in Florida, but he meant probably another sp. Ours undescribed as yet.

8. *A. FISCHERI* Reichenberg. ill. ac. 22. *A. nasutum* Fischer, Spr. Hooker, Eaton, Seringe

Leaves broadly laciniate, raceme paniculate, hood conconical, spur bent, nectaries erect—In Oregon and Kamiskatka, different from the *A. nasutum* of South Europe.

9. *A. OREGONSENSE* Raf. Smooth erect, segments digitate, 5parted, segments pinnatifid, narrow acute; fls. racemose erect, hood conical very obtuse, spur strait—In Oregon, stem simple 1 or 2 feet, flowers large blue 5 to 10. Compare with *A. kelleri* of Siberia. Seen alive in gardens.

Figures, Autikon rar. 2.—Ic. N. Sp. 2.

10. *A. DELPHINIFOLIUM* Decandole. Stem erect downy above; leaves with many pinnatifid segments, raceme few flowered, hood convex acute.—On some Islands of the N. W. Coast. Stem 6 to 20 inches high. Called var. *Americanam*, and two other var. deemed varieties of *A. napelluc*, by Hooker.

ACORUS, well known Genus, which I have increased to 6 species. 1. *A. verus* of Asia.— 2. *A. gramineus* of China. 3. *A. Europeanus* in med. fl. page 2, with three American species.

1. *A. AMERICANUS* Raf. med. fl. fig. 1. Leaves and scapes broad gladiate, scape longer; spadix submedial lateral, capsules oblong acute.—From Canada to Missouri and Virginia. Estival, 2 or 3 feet high.

2. *A. FLORIDANUS* Raf. *A. calamus* Elliot &c. Leaves broad gladiate longer, scape shorter, triangular, one side concave, summit gladiate; spadix near the end, stamens exerted capsules oval-obtuse.—Florida to Carolina.—Scape only one foot high, fl. vernal.

3. *FLEXUOSUS* Raf. fl. tex. 29. Leaves graminiform narrow shorter, scape longer flexuose triangular, one side concave, end like leaf; spa-

dix medial.—Texas to Tennessee, dwarfish, one foot high, vernal. Autikon rar. Ic. n. sp.

ACROANTHES Raf. 1818, Dexvaux 1810. *Microstylis* Nuttal 1818! Beck 1833! Lindley Gray . . . *Malaxis* sp. Michaux and authors. *Ophrys* Lin . . . A very distinct Genus by habit and flowers, ascertained by me since 1802, named and described ten years before Nuttal's subgenus, since made a Genus, by others who have neglected to restore my previous name, meaning *uncolored flowers*.

Orchidea with *bulbose root, stem with a medial sheathing leaf, raceme with bracts and scattered minute green flowers*.—Sepals narrow connivent, the two inner narrower; lip erect cuculate, dilatate: Column minute bearing 2 anthers terminal annexed. Gray says one anther with 2 cells and 4 pollens. Nuttal said 2 unequal anthers, one with a single pollen! which must be by abortion. Capsules globose, often abortive.

1. ACR. LAXIFLORA Raf. *unifolia* 1808.—*Malaxis unifolia* Mx. *ophioglossoides* Pers. *Microstylis ophioglossoides* N. Beck &c.—Stem hardly angular, leaf ovate subcordate acute raceme oblong and lax, peduncles filiform; sepals linear, inner filiform, lip emarginate toothed in the middle.—From Newyork to Carolina, rare, Estival, in shady groves under trees.—Stem 6 to 10 inches high, flowers greenish.—Seen alive 1802. Figures in Pluk. alm. 435. f. 4 and my Autikon 41. Ic. rar. 60.

2. ACR. OBTUSIFOLIA Raf. Scape angular, leaf cordate elliptical obtuse, raceme lax elongate, peduncles filiform; sepals oblong, inner linear, lip furcate or hastate, toothed in the middle.—In Alabama and Georgia, probably the

plant of Elliot. My specimen is 10 inches, the leaf large and broad, sheathing the stem, which has two other sheaths at the base, bracts small squamiform round. Autikon 42. lc. 61.

3. ACR. ACUMINATA Raf. *Microstylis brachypoda* Gray. Stem triangular, two angles winged, leaf ovate (acute?), raceme elongate slender, pedicels short adpressed; sepals oblong inner linear, lip hastate, trilobe, 2 lobes rounded middle one acuminate.—Shady swamps of Onondaga and Herkimer in New York. Estival, stem 2 to 6 inches. Deemed akin to the next European sp. by Gray; which I add to show the distinction.

ACR. CILIFOLIA Raf. *Ophrys cilifolia* & *O. monophylos* L. *Malaxis* Persoon, *Microstylis* Lindley. Stem triangular, leaf ovate acute ciliolate, raceme slender as long as stem, pedicels short patent, sepals ovate, inner lanceolate lip entire concave acuminate.—Swamps of Prussia and the Alps. Perhaps two sp. are even blended here; but I have no materials to distinguish them properly: let the European botanists do so; but restore my genus *Acroanthes* 1808 adopted by Desvaux.

ACROSTICHUM, this linnean genus is now distributed into 14 Genera, since Smith and Willdenow reform of the ferns! *Woodsia*, *Schizea* and *Woodwardia* belonged once to it! the *A. lanceolatum* is become the *Nephrodium acrostichoides* of India, not ours, both of my genus *Synotelis*. His *A. platyneuron* is our *Asplenium ebeneum*. His *A. polypodioides* is our *Polypodium incanum*—*A. ilvense* is *Woodsia*—*A. oreolatum* is *Woodwardia*—*A. lineatum* Mg. is *Schizea Pusilla*?

Our only sp. left in it has even probably been mistaken for another.

1. *A. MARITIMUM* Raf. *A. aureum* Mx. Pursh Pinnate, smooth, pinnules *stipitate* oblong entire obtuse or acute.—Sea shore of Florida, large fern, unfigured as yet, compare with next again.

2. *A. AUREUM* L. (Bogs of Antilles, often figured) gigantic fern 5 to 10 feet high, pinnate, pinnules *sessile* cuneiform oblong oblique obtuse, veins reticulated. The *Ongpi* of Sumatra united to this, is a third sp.

ACTAEA Linneus united thereto sp. with capsule instead of berry, other botanists have united *Cimicifuga* with it, *having many capsules!* a double blunder. The real *Actaeas* have a real berry, not opening. We have two sp. distinguished by me since 1802; but Muhlenberg prevented me to publish them, because both deemed then var. of *Actea spicata*: while Bigelow has published them since as peculiar. The blue berry species is the *Caulophyllum*.

1. *A. RUBRA* Raf. Big. *brachypetala* & *americana* of others. Petals acute shorter than stamens, last leaf trilobe, berries red. Deep woods from Canada to Kentucky, and Carolina.

2. *A. ALBA* Raf. Big. Beck *pachypoda* Elliot. Petals truncate longer than stamens, last leaf ovate, berries white, 5 seeded on thick peduncles often white also.—Canada to Carolina. Leaves in both bi-triternate, flowers white vernal, see med. fl. Seen alive. Autikon.

Actea racemosa see *Botrophis serpentaria*.

ACTINEA Jussieu or *Actinella* of Persoon, adopted by our botanists, being identic with *Actinia* a genus of animals, was changed by me to *Ptilepida* 1817, which see.

ACTIMERIS Raf. misspelt *Actinomeris* by Nuttall, who proposed it. Well distinct from all

the akin genera with winged stems, and my *Cauloma* that has naked seeds. It has even 2 subgenera, and *Anomeris* is quite distinct.

I. OLIGOLESIS Raf. Perianthe uniserial, rays 2 to 3, seeds marginate, *alternate leaves*.

1. *A. squarrosa* N. *Corcopsis alternifolia* L. Leaves scabrous, lanceolate serrate.—Canada to Florida: several varieties; but the *Alba without rays*, is a peculiar Genus! *Anomeris*.

Var. *procera*, tall, 6 to 10 feet high, flowers paniculate. *Corcopsis procera* Aiton.

Var. *pauciflora*, stem simple, few flowered, leaves lanceolate serrate.

Var. *serrulata*, Stem simple few flowered, leaves oblong lanceolate serrulate.—the *A. pauciflora* Nutt, hardly distinct from the last.—Kentucky and Florida. All seen alive. Antiken.

The *A. alata* N. of Mexico, with opposite leaves is probably congeneric with *Verbesina siegesbeckia* my *G. Anemantha*.

II. MEGACTELIS Perianthe biserial 10 to 12, seeds hardly marginate, *leaves alternate sessile*, Perhaps belonging to my *G. Cauloma*.

2. *A. helianthoides* N. Leaves lanceolate acute serrate, hairy beneath, flowers coarctate, perianthe linear lanceolate rays 9.—Ohio to Louisiana. Seen alive.

3. *A. ELLIOTI* Raf. *A. helianthoides*, E. Stem and leaves scabrous, ovate lanceolate serrate acute, flowers corymbose, perianthe oval, rays 10 to 12.—Georgia and Alabama. Stem 2 to 4 feet, terete winged, Seen dry.

ACTISPERMUM Raf. misspelt *Actinospermum* by Elliot, from *Actinea*! *Balduina multiflora* N. differs from *Balduina* by perianthe biserial not imbricate, perianthe with 6gone 6toothed cells, pappus simple starlike.

A. MULTIFLORUM Raf. Smooth, multiflore, leaves alterne sessile linear, perianthe acuminate. Florida &c. Well described by Nuttall and Elliot.

ADELIA of Michaux and Brown, not of Linneus, is *Borya* of Willdenow 1805, and Persoon, not Labillardiere 1804, yet adopted by our botanists; but changed to *Bigelowia*, by Smith 1820, not of Raf. 1817. What a jumble of blunders! yet must be changed again or united to my *Nudilus* which see.

ADENARIUM Raf. 1816, Dec. Differs from *Arenaria*, by having large glands interposed between the Stamens and a different habit. *Honkenya* of Erhart, not of Willdenow. Another genus *Adenaria* of Kunth since, must also be changed to *Decadenium*, Raf.

1. *A. peploides*, Raf. *Arenaria*, do. L. Suffrutescent, leaves fleshy ovate acute subserrate.--Europe, Sea shore, seen dry.

2. *A. Maritimum* Raf. *Holosteum succulentum* L. *Arenaria peploides* of Amer. botanists. Herbaceous dichotome, leaves fleshy ovate obtuse entire petals obovate--Atlantic shores of N. America from New England to New Jersey, in sand, flowers white, vernal, terminal and in forks. Seen alive. Nuttall refers to this, the American *Holosteum* of L. who must have mistaken the glands for trifid petals, but he says leaves elliptic. Figures Autikon. Ic. n. sp.

ADENOCAULON of Hooker, N. G. near *Tussilago*, differing by naked seeds without pappus. *A. bicolor*, stem glandular, leaves cordate subtrilobe angulate dentate. From Oregon. Akin to *Acmella*, differing by want of chaff in the phorranthe.

ADENOGYNA Raf. 1825. Type the *Saxi-*

fraga sarmentosa of Japan, introduced into N. America, and spontaneous in Kentucky.— Genus very distinct by petals unequal, 2 lower longer, pistil glandular. See my monograph of *Saxifraga* genus and tribe, including N. Gen. *Hemieva*, *Ditriclita*, *Steiranisia*, blended with *Saxifraga* by Hooker, altho' as good genera as his *Eriogyna* and *Leptarhena*.

ADIANTHUM PEDATUM Raf. Med. fl. tab. 2., the only Sp. well known to all botanists.

ADIKE Raf. 1815, An. Nat. ancient name of some Nettles. A very peculiar Genus distinct from *Urtica*, by perfect smoothness, and pellucid stem and leaves, bearing in N. America the peculiar names of *Richweed*, *Coolweed*, and *Clearweed*, never nettles. My name misspelt *Adesia* by Eaton! I had spelt it *Adicea*, I now restore the original Greek name of Dioscorides.

Monoical, Calix similar in both, 3partite, sepals linear thick obtuse or cylindrical, erect. Stamens 3 elongate no nectary. Fertile fl. with persistent calix, a sessile capitate stigma. Seed ovate compressed—*Habit* annual, stem erect thick, leaves opposite petiolate serrate, very smooth, trinerve, flowers estival in axillary and dichotome corymbs, Sometimes a fourth part added; but the Genus does not depend so much on number as the consimilar peculiar calix.

1. **AD. PUMILA** Raf. *Urtica pumila* L. stem filiform dwarf, base naked, leaves ovate obtuse, lower entire, upper deeply crenate-serrate with an obtuse point, margin subciliolate, petiols shorter than leaves: corymbs pauciflore short. In the Alleghany Mts. and near Philadelphia at Manayunk. Stem 2 to 5 inches, pellucid round

leaves small, flowers few. Linnæus says in *Canada Aquosis*, stem digital. I have found his real sp. unknown to many botanists who mistake the next for it.

Var. 1. *Minima*, biancial, few leaves on short petiols. Figures, Autikon Raf.

3. *A. GLABERIMA* Raf. Med. fl. (*Urtica pumila*, Mx and all our botanists except Elliot.)---Stem round fleshy pellucid; leaves on long petiols, oval acuminate, lucid, serrate: corymbs dichotomous multiflore.—The most common species all over the U. States, stem one or two feet high, thick often diaphanous! leaves large extremely smooth.—Var. *ramosa*, stem and corymbs branched.—Autikon Raf.

3. *A. LANCEOLATA* Raf. (*Urtica pumila* Elliot) stem obtusely quadrangular, fleshy and branched; leaves on long petiols, lanceolate acuminate, serrate, with some hairs above; corymbs multiflore, some recurved.—Stem pedal branching from the base. In Carolina, Elliot's description is original; but his diagnosis borrowed to make it agree with the last.

4. *A. RHOMBOIDEA* Raf. Stem round dwarf, branched at the base; leaves on long petiols, ovate rhomboidal or subdeltoid, base entire, end with obtuse point, sides crenate serrate not ciliolate; corymbs multiflore often foliolate and recurved.

In Kentucky, rare, stem 6 to 8 inches, near to *A. pumila*, but larger stem and leaves, petiols equal to leaves except on branches. Seen alive.—Figure, Autik. Raf.

ADLUMIA Raf. 1803, Dec. Beck. Noticed as a genus as early as 1804 in the garden of the collector Adlum, and also in the Alleghanies at Peter's Mt. only indicated in 1808, since well

established by Decandole and begining to be adopted. Very distinct from *Corydalis* by Corolla bigibose by 2 spurs as in *Dielytra*, but 4 petals spungy and coalescent, persistent over the pod.

A. CIRRHOSA R. D. B. *Fumaria fungosa* Aiton, *F. recta* Mich. *Corydalis* of many botanists. Scandent cirrhose, leaves decom pound, racemes laxiflore axillary.—In the Alleghanies from Mattawan Mts. to Apalachian Mts. Perennial.

Var. *rupestris*. Trailing on rocks, leaves cespitose.

Var. *clatior*. Trailing up trees 10 feet high, leaves remote.

Var. *alba* & *rosea*, with white or rose flowers instead of usual pale incarnate. All seen alive.

ADNARIA Raf. fl. lud. probably a subgenus of the *Codorolla* or *Vacciniums* with bell flowers, which see.

ADOKETON Raf. Mus. N. Sc. 1. Akin to *Lahayea*, distinguished as follows—petals entire, stigma trilobe, capsule few seeded.

Lahayea misspelt *Hagea* by Persoon (dedicated to Lahaye) has petals emarginate, stigma entire, capsule polysperme.

Both have Cal. 5ph. 5 petals, 1 style, capsule unilocular, trivalve, trigone, seeds central. *Leaves opposite*.—Nat. family of Dionidia.

1. **A. UNIFLORUM** Raf. Stem uniflore, leaves ovate minute, calix and petals acute equal,—On the summit of the Unaka Mts. of N. Carolina, one inch high, flower white vernal. Seen dry, Ic. n. sp.

2. **A. SAXATILE** Raf. Mus. Nat. Sc. *Illecebrum alsinefolium* Scopoli. Stem multiflore, leaves oval acute, calix segments hooded, petals

longer oblong obtuse, capsule 6 seeded—Rocks of Mt. Gallo near Palermo, and in Spain. Seen alive in 1812, described 1817.

ADONIS. Decandole has reformed this genus, the two linnean sp. being the type of two sections, the annual having 6 to 8 petals concave, style strait: the perennnial (*Consiligo*) 8 to 15 spreading flat petals, style hooked.

A. RIPARIA Raf. (*A. autumnalis* of N. America, wrongly deemed exotic) stem ramose striate, leaves glaucous crowded tripinnate multifid, pinnules crowded linear, end trifid acute flowers terminal, solitary sessile, petals 6 to 8 concave round.—Margins of streams. West Kentucky to Louisiana, pedal, annual, flower scarlet, base darker spotted. Real native. Autikon.

A. autumnalis of Europe has stem slender, leaves short, remote, flower pedicellate, petals obcordate, and grows in fields.

ADORIUM Raf. fl. Miss. *Marathrum* Raf. 1819, N. G. 22, this name was very good; but Dec. having a *Hipomarathrum* which must become *Marathrum*, I have changed it for greater accuracy. Both were Greek names of umbelliferous. Humboldt has also another *Marathrum*.

It differs from *Seseli* by involucre, involucels 5 leaves unilateral membranous, calix 5toothed, petals ovate acuminate involute, fruit oblong, angular striate. *Leaves opposite, many sterile flowers.*

1. *A. crassifolium* Raf. *Seseli divaricatum* Pursh, Nuttall. Branches divaricate, leaves thick pinnatifid, peduncles rigid.—On the R. Missouri. Well described by Nuttall, fl. yellow vernal. Seen dry. Figure in my Autikon rar.

ADOXA MOSCHATELINA L. said by Torrey and Hooker, to grow in boreal America and the Oregon mts. undescribed. My specimens from Europe. Genus near to *Panax* and *Aralia*.

ADVENTINA Raf. Radiate. Perianthe globular 5 phyle, Sepals connivent equal ovate acute. Phoranthé flat chaffy. Rays 5 fertile, equal small and opposed to sepals, ligules short trilobe white, ovary and seed shut between the sepals and internal palca or chaff, similar to sepals oblong and thus bivalved, style very short bifid, pappus paleaceous multifid. Floscules of the disk minute yellow complete, chaff lanceolate flat, corolla tubular 5toothed, stamens and style inclosed, pappus campanulate multifid.—Seeds black oblong compressed bivalved in rays, oblong terete in disk. *Leaves opposite, flowers terminal.*

1. PARVIFLORA Raf. Stem slender branched diffuse smooth, leaves petiolate ovate acute angular dentate, lower rounder, upper nearly sessile and entire; flowers terminal lax—Growing spontaneous for several years in the orchard of Bartram's Garden, come with seeds from the South. Annual, Estival, pedal. Leaves thin smooth, flowers very small, white rays hardly exerted. Very different from any known genus, nearest *Achillea*, but habit calix and seed unlike. Named after its adventitious production near Philadelphia. Probably a Florida plant. Seen alive.

Figure Autikon 5, and Ic. n. sp. 5.

2. A. CILIATA Raf. Stem thick pilose, trichotome and dichotome, leaves petiolate ovate serrate ciliate, flowers in forks or terminal subcorymbose—Found with the last, but in a different

place and season: smaller, but flowers larger, Autumnal, annual, 6 to 10 inches high, hardly ramose or nearly simple. Messrs. Carr owners of Bartram's garden cannot account for the spontaneous production of these plants and several others in their garden.

Figure Autikon 6. Icon. n. sp. 6.

I must conclude here this beginning and model of a proper LEXICON of our N. American Flora. To continue the whole Flora even in this concise form, would fill several large volumes. This specimen contains about 40 articles and Genera, whereof many are new, and includes nearly 150 species, whereof many were undescribed.

North America, excluding the Mexican States contains probably 2000 Genera and 10,000 species of trees and plants, exclusive of the Cellular or Cryptogamic plants; but including Palms, Grasses and Ferns, Shrubs and Vines. . . Our Botanists know or admit of hardly more than one half. Botanical Works are filled with plants neglected by them, because rare and little known. Our Herbals or Botanical Collections contain a crowd of plants as yet unnoticed and undescribed. Baldwin's Herbarium has been a Botanical mine for 20 years past, for Elliot, Nuttal, Torrey, &c. and will continue so a long while. Nuttal will soon increase the Oregon Western Botany by perhaps 1000 N. Sp.—Whoever applies to the proper study of a single Genus or family increases or doubles our knowledge of it. Torrey has lately increased our CYPERACEA alone to 25 genera and 326 species and he has not exhausted this tribe; but omit-

ted many genera and synonyms.

Meantime my own Herbarium and *AUTIKON* contains about 1200 New Genera and New Species discovered and collected since 1802, but chiefly from 1815 to this time; and whereof but a small part has been published or indicated as yet. It is therefore to these that I must apply myself at first in order to make known my discoveries and labors with the hidden wealth of our Flora. I shall however at the same time give many discriminating monographs of Families and Genera, to elucidate their critical and correct knowledge.

The New trees and Shrubs of North America which I have discovered and ascertained might form a separate volume; but I may add them if practicable. As I have stated already, arrangement is of little consequence now in botanical works; since every botanist changes the serial order, by misunderstanding the real steps of nature in organized vegetables. If I was to offer a very elaborate series of real corrected NATURAL ORDERS as I did in 1815, they would be deemed improper by those who now begin to dabble in them, and give us jumbled families without *peculiar essential characters*, and *without proper names*, as they constantly go on to do the same with GENERA and SPECIES.

I seldom was able to publish a botanical work exactly as I wished in the proper style and plan. I can only collect and afford new materials, observations and criticisms for better times or moods. Yet my actual labor, is as much a Flora as that of Michaux or Pursh, since it includes more new discoveries, and may only pass over the wellknown and settled plants. But whenever doubts or disparities occur, they will deserve

my attention and critical investigation. The 40 articles of this Lexicon have already proved how many striking mistakes and palpable errors of Linneus, Michaux, Pursh, Hooker, Nuttall, Beck, Eaton, Torrey, Elliot, and others exist undetected and unnoticed by our writers and compilers. At this rate the 2000 Genera will afford 5000 similar blunders.

It is a weary and ungrateful task to revise errors ; but it must be done : Since every exposed error is equal to a discovery. I shall not even spare my own, as we are all liable to them, and we improve by age and experience. If all would be as careful and as liberal as I am, the science might soon cease to be involved in hidden groups of neglected genera and species, or in useless synonyms of mistaken plants, and improper names.

Meantime in order to name properly my new American plants, it has been needful to study over again and revise many Genera and Natural families ; since several are yet in utter confusion, by the usual practice of Botanists to refer plants at random, and without attending to the actual characters, to force them into genera where they do not belong.

This arduous undertaking was indispensable, and has led me to revise, reform, divide and fix several natural families and a crowd of genera ; but such a labor altho' connected with our American Botany, applies nevertheless to the whole Globe, and has become my *SYNOPSIS FLORAE TELLURIANA*, or synoptical Mantissa of 2000 New Genera, Species, Orders, &c., which will be the companion to this North American Flora, and the complement of my Botanical researches.

Being in hope of obtaining the Herbarium of my late friend Z. Collins, which contains many

new and rare plants collected by himself, besides Kin, Boyken, Baldwin, Nuttall, Elliot, Ware, Leconte, Schweinitz, &c., from Florida and Arkansas to Labrador, I may find there additional materials for this Flora; therefore, the delay that may occur in the publication of the numbers, will be compensated by the additional new plants I may be able to describe.

I shall either continue to give monographs of some remarkable or rich genera, beginning with *Kuhnia*, *Gentiana*, *Lechea*, *Hypericum*, &c., or I may give series of new Species from interesting localities.

I may also pay particular attention to our New Genera, many of which are improperly referred as yet to akin Genera.

As to the Natural Orders of our Plants, my general views and examples have been given in my preface, and will be found in the Introduction to the FLORA TELLURIANA.

It is again recommended to our Botanists to study well the natural affinities and disparities of Genera and Species, both of which they have often heretofore either neglected or overlooked.

NEW GENUS OLSYNIUM.

A very fine New Genus from Oregon, has been blended with *Siryrinchium* by the English Botanists, which I have called OLSYNIUM, meaning hardly united, It differs by the Corolla campanulate, the long free stamens only united at the base, 3 stigmas &c, and belongs to the same natural family of GALAXIDIA, distinguished from IRIDIA by stamens not quite free.

OLSYNIUM. Corolla of 6 petals campanulate, each oblong, striate. Stamens 3, filaments free and subulate, base contracted above the united base. Style elongate, stigmas 3 acute. Ovary and fruit as in *Siryrinchium*. Roots fibrose, leaves sheathing, spatha bivalve, biflore.

OLSYNIUM GRANDIFLORUM Raf. *Siryrinchium grandiflorum*. Douglas in Bot. register 1634. Bot. magazine 3509. Stem compressed, leaves shorter, acute, spatha unequal margin membranose, flowers twin drooping deep purple.

A lovely and graceful plant, discovered at the falls of Oakanagan on the Oregon River. It is hardy, flowers vernal large, nearly two inches, but never spreading flat as in *Siryrinchium*.

NEW FLORA OF NORTH AMERICA.

 MONOGRAPH

OF THE GENUS KUHNIA,

WITH REMARKS.

BY PROF. C. S. RAFINESQUE.

OCTOBER 1836.

This curious Genus has appeared to puzzle many Botanists, the species being rare and local, have been seen by few of them, and they have often copied each other, or mistaken those seen. Sir James Smith has given a good account in Rees Cyclopaedia, of some old blunders about it ; but many more remain to be detected : the original linnean species having again been found on the very spot where Dr. Kuhn probably procured the specimen he took to Linneus, affords the opportunity to do so, and to notice at the same time the other kinds discovered by Elliot and myself.

Dr. Adam Kuhn was but a poor botanist and hardly deserved to have such a fine Genus named after him : he has written nothing ; but only gave the first linnean Lectures in North America. It appears that he did not even find himself the first *Kuhnia*, but it was brought to him, and he had the only merit to take it to Linneus, who flattered by having a Student coming to him from Pennsylvania, and struck by the anomaly of the Stamina, dedicated the same to him as a new Genus. Schoepf has written that having applied to Dr. Kuhn to know the locality of the plant, he could not tell, not

having found it himself. Meantime Gaertner having proved that the chief linnean distinction of separate stamina was wrong, since the plant he described as the same, bad syngenesious stamina : the Genus became fixed by the striking character of plumose seeds, and well distinguished by it from *Eupatorium*; but he wrongly called it *Critonia*, mistaking it for a *Critonia* of Brown, which Smith states to be the *Eupatorium dalea*, with scabrous pappus. All the sp. of *Eupatorium* have more or less such a scabrous or dentate pappus. The alternate leaves are no character of the *Kuhnia* since I have found a species with opposite leaves, and the very *Kuhnia* of Linneus has sometimes such leaves below.

The plant of Gaertner tab. 174, who only figured the seeds, has been made since a second Sp. of the Genus, and called *Kuhnia critonia*; but I shall show by Wildenow and others presently, that it is by no means positive that he was mistaken, since the original *Kuhnia* of Linneus, offers sometimes on the same plant the characters of both species; Ventenat and Persoon unite both again.

Sir James Smith regreted that these plants were not introduced as yet in the English Gardens. In Loudon Cyclopedia of plants they are not mentioned as introduced in 1829, being omitted. Yet in the second edition of Sweet Hortus Brittanicus, published in 1830, I find 3 species mentioned as introduced, the *K. eupatorioides* in 1812, *K. critonia* in 1816, and *K. rosmarinifolia* in 1827. But they must be very scarce, and they had not been figured yet in the magazines, nor elucidated by English Botanists.

Ventenat united to this Genus the *Eupatorium canescens* of Ortega, a plant of Cuba, and called it *K. rosmarinifolia*; he was followed by Persoon in this.

Michaux perhaps never saw this plant since he does not mention their locality nor distinction and has only one *Critonia Kuhnia* which no one can prove to be Gaertner's. Muhlenberg never saw these plants alive and ascribes to both white flowers. Pursh meantime gives yellow flowers to *K. critonia*, but quotes no locality. Willdenow's account appears to be made up of Linneus and Michaux account, making 2 Sp. of them. Lamarck copied Linneus and his fig. tab. 26 is *K. eupatorioides*. Poiret has copied Michaux and Ventenat.

W. P. C. Barton in his flora philadelphica 1817, states to have found the linnean plant on the rocks of the Schuylkill R. above Lemonhill; but Nuttall in 1819 ascribes that very same locality for the sp. *K. critonia*: and it is there also that in 1836 has been found by Mr. Durand and myself the Linnean plant, which I suspect to be identic with that of Gaertner.

It is said that the *Eupatorium alternifolium* of Sibiria, figured by Arduin, is also the same plant, and Sir James Smith could find no difference in the specimen sent by Arduin to Linneus. Yet is very strange that the same plant should grow near Philadelphia and on the Altaic mts. of Asia, and hardly any where else: since it is not in the Flora of Hooker and therefore does not extend to Canada, nor the central and western parts of North America. Nor is it found in the floras of Louisiana and Missouri. Therefore the Sibirian plant must again be

compared with ours, and will be found different, in fact Lamark has noticed some difference in it. Torrey in 1826, and Beck in 1833, in their floras of the Northern States have both the Linnean and Gaertnerian species, but have never found them growing wild, since they quote no locality, but merely copy the characters of other authors, stating Pennsylv. and Virginia, as the native place of both. Beck besides ascribes pale yellow flowers to *K. critonia*, as Pursh (but Torrey says white) and Torrey a pubescent stem. But all the species with whitish flowers, turn yellow in drying, and a pubescent or glandular Stem belongs to many: while Smith describes his as smooth; but this varies on the same plant.

In 1818 I discovered in Kentucky a narrow leaved sp. which I mistook for the *K. critonia*; but have since found very different from the *K. critonia* of Elliot 1824, who is the only one that has described it properly; but his plant is even probably different from Gaertner's: while my plant is perfectly distinct by the fulvous pappus, stated to be white in all the others; I called it *K. media* in 1833 but *K. fulva* would be a better name. I found it in 3 localities of Kentucky and even on the banks of the Ohio.

In September 1823 in my visit to the falls of the R. Cumberland, in the Wasioto hills of East Kentucky, a beautiful botanical spot visited by no Botanist but myself, I again detected another sp. of *Kuhnia*, quite distinct by opposite elliptic short leaves. I named it *K. elliptica*, and it is described in 1833 in my *Herb. Rafinesquianum*.

Elliot has 3 Species of Southern *Kuhnia* in the 2d volume of his flora of Southern States

1824, and all appear to be new, his *K. critonia* is that of Mx. probably and nearer to *K. rosmarinifolia*, yet distinct, and I named it *K. tuberosa* in 1833. His *K. eupatorioides*? deemed doubtful by himself, altho' very near the Linnean Sp. is somewhat peculiar, and perhaps distinct, it is my *K. dasypia*. It is from the prairies of Alabama. There also grow his 3d Sp. *K. glutinosa*, a new sp. which I possess and is quite distinct. It has been adopted by the compiler Eaton, with the other usual 2 sp. in 1833 in his manual of Botany, 6th edition, who never saw any of the plants; he ascribes with Pursh to *K. critonia*, pubescent and petiolate leaves!

Few of these botanists appear to have taken the trouble to consult the original description of Linneus, Arduin and others, and thus they ascribe the characters at random. The original *Eupatorium alternifolium* had *Stem terete pubescent, leaves lanceolate, petiolate, decurrent, triuncial, rough: corymbs multiflore compact, calix striate*. This is the Siberian plant of Arduin tab. 20. But Linneus in his last edition describes the *K. eupatorioides* with *Stem rigid* and branches in the middle *smooth, leaves alterne subpetiolate broad lanceolate serrate rugose, uncial, upper ones linear lanceolate entire; corymbs small*; which agrees perfectly with the plants found near Philadelphia in 1836. Yet he refers to it the above disparate plant of Arduin, and also the figure of Plukenet 87. 2! best figured in his son's decads tab. 11. Meantime the plant of Gaertner is described by Smith with entire leaves, linear lanceolate and corymb paniculate pauciflore.

Yet Michaux's plant (with Gaertner's name)

is pubescent, leaves linear lanceolate, commonly entire, punctate beneath, flowers paniculate.

All these disparities evince that this fine anomalous and rare Genus has been misunderstood and improperly described by nearly all the botanists. Now at last in 1836, the original Linnean and Kuhn's plant having been found wild on the very identical spot, whence carried to Linneus, many specimens collected, of several varieties growing together, and roots, seeds and specimens sent to England by Dr. James Mease: the original species will become better known. Meantime I presume that the following comparative view of the Species actually known will be acceptable to the Botanists and Horticulturalists.

These plants altho' not very conspicuous, are not destitute of beauty, by their elegant shape and plumose seeds. They are all hardy perennials with thick roots; they blossom in September, and assume their feathery appearance in October.

1. *K. eupatorioides* L. (*Critonia* of many authors), exactly as described by Linneus: only add, root brown perpendicular with lateral fibres, lower leaves trinerve, subpetiolate or base attenuated, 1 or 2 inches long, a few are opposite sometimes, stem terete striate, whole plant covered with minute glands mistaken for pubescence by some; perianthe striate glandular, flowers pale yellowish white, pappus white. Rocky banks of the R. Schuylkill near Philadelphia, in a single spot near the rail road bridge: 3 varieties 1 *Pyramidalis* tripedal, lower leaves lanceolate, entire at both ends, branches and corymbs pyramidal with entire narrow leaves. 2 var. *corymbosa*. Stem simple, leaves

narrow lanceolate, somewhat serrate in the middle, flowers in a multiflore compound corymb. 3 Var. *angustifolia*, stem simple pedal leaves linear lanceolate entire, flowers in a simple pauciflore corymb. These 2 last are probably the *Critonia* of Gaertner and others, yet they are perhaps nothing else but various ages of the plant? but since they have been mistaken for species, they must be properly noticed.

2. *K. altaica* Raf. If the Sibirian plant is distinct as probable, it may be distinguished by Stem really pubescent, leaves triuncial alterne rough decurrent, lanceolate base not attenuated. This is *Eup. alternifolium* Arduin tab. 20, and Linneus in first editions.

3. *K. dasypia* Raf. *eupatorioides* Elliot. Stem branched pubescent, leaves alternate, lanceolate unequally serrate, glandular punctate, triuncial, rough above, pubescent beneath; flowers paniculate white, pappus white. Meadows of Alabama and Georgia.

4. *K. glutinosa* Elliot, glutinose pubescent, leaves lanceolate alterne sess. serrate laciniate, upper entire; flowers corymbose panicled. Meadows of Alabama, well described by Elliot, who sent me a specimen. Stem bipedal, branched, viscose glands mixt with hairs all over.

5. *K. elliptica* Raf. discovered 1823 described 1833. Stem striate pubescent, branches and leaves opposite, leaves sessile smooth, elliptic uncial, serrate in the middle, glandular beneath, flowers whitish in lax multiflore corymbs, pappus cinereous—Falls of the R. Cumberland, 3 feet high; very handsome species. The *K. glabra* of my monograph 1833 which I mistook for the linnean sp. is only a variety of this with stem smooth, leaves subpetiolate, flowers less lax. I found it in the Alleghany mts. on the

Monongahela in 1825. Var. *montana*.

6. *K. tuberosa* Raf. 1833. *K. critonia* Mx. and Elliot exclus. Syn. Root tuberosc, stem virgate striate pubescent; leaves alternate sessile linear entire, pubescent, margin revolute, flowers paniculate white, exterior sepals of the perianthe reflexed, pappus white.—In Carolina, dry soils, well described by Elliot but under a wrong name.

7. *K. fulva* Raf. disc. 1818 descr. 1833 as *K. media*: entirely smooth, stem striate virgate, lower leaves opposite, upper alternate, all sessile linear lanceolate entire, long pale beneath and not glandular; flowers paniculate yellowish, pappus fulvous—On the banks of the Ohio and hills of East Kentucky, about 2 feet high, leaves 3 inches, down or pappus very peculiar by its color. I sent my 2 N. Sp. to Decandole; but have not yet seen the 5th volume of his Synopsis. I possess yet several specimens of 1, 5 and 7 to furnish to botanists, and they are figured in my Autikon. and Ic. rar.

8. *K. pubescens* Raf. mon. Entirely pubescent, stem virgate striate, leaves subpetiol. lanceol. nearly entire, punctate, fl. paniculate, pappus fulvescent—Seen dry, said to grow in the mts. Alleghany, perhaps only a variety of the *K. tuberosa*, or *fulva* or *K. eupatorioides*; but the down was not white in the specimen: probably mistaken by many for the 2 usual species, whence the difference of descriptions. I deem the color of the down truly essential.

9. *K. rosmarinifolia*, Vent. Pers. &c. Leaves canescent linear lanceolate semiamplexic. very entire, margin revolute, peduncles terminal uniflore, fl. purple, pappus white? In Cuba, compare it with *K. tuberosa*; but the flowers separate them. *Eup. canescens* Ortega dec. 34.

MONOGRAPH OF AMPHICARPA AND AKIN GENERA.
OF THE GROUP TETRODES.

G. AMPHICARPA Elliot. The Genus *Glycine* of Linneus, a strange medley of species without common characters, is now divided in many Genera requiring yet discrimination and revision. As early as 1804 I had proposed to Muhlenberg the Genus *Tetrodea* for *Gl. monica*, *comosa*, *subterranea*, having a tubular 4toothed calix, and I indicated this G. in 1808. But in 1818 Elliot established with them his *G. Amphicarpa*, which has been generally received. Decandole wrongly spells it *amphicarpea*. but as each of these 3 sp. may be the type of a peculiar Genus, I shall now revise it and add several sp.

AMPHICARPA Calix tubular sub campanulate, base obtuse or gibbose, 4 teeth acute subequal. Petals equal oblong keel obtuse, wings 1toothed vexillum adpressed or incumbent. Stam 9-1. Stigma capitate. Pod stipitate, oblong, compressed acuminate by the style, 3-4 seeds subreniform. *Sometimes the lower flowers solitary without petals nor stamens, perfect fl. racemose and bracteolate, Perennials.*

LOBOMON Raf. calix campanulate, base acute, unequal 4toothed. Petals and stamens as above, but commonly apetalous flowers dioical or monoical, with 5 minute sessile united anthers. Pod flat semi ovate acute, without style, one side strait, 2 seeds lenticular. *Annuals Flowers axillary, not racemose, no bracts.* (Name ancient.)

GEOLOBUS Raf. calix campanulate, 4fid, upper segment notched. Petals unequal, keel and wings oblong, vexillum obovate striate notched.

Pod compressed round acute, one seed lenticular, *Pedaucles biflore bibractate, flowers yellow, pods hiding in the ground*, which the name implies. Annuals.

The 3 Genera have twining or flexuose stems, and stipulate trifoliate leaves, roots creeping flowers estival.

1. AMPHICARPA VILLOSA Raf. *Gl. comosa*? L. &c . . . Twining, stem and leaves hairy, folioles subequal ovate oblong acute soft, the lateral oblique: racemes short 5-9flowered, bracts ovate acute striate, calix hairy—In Alabama and Mississippi. Folioles uncial equal to petiols, flowers white tipped with purple. Linneus having only said of his *Gl. comosa, leaves hirsute, racemes small lateral, flowers blue, seeds with purple spots*: it is impossible to identify it. Torrey, Beck and Elliot omit it; while Nuttall deems it the real type of *Gl. monoica*. My descriptions and specimens will fix my sp. to which I give new names to avoid ambiguity.

2. AMPH. CILIATA Raf. stem twining filiform round with reflexed hairs, leaves on long petiols, smooth but ciliate, folioles unequal, lateral sessile oblique trapezoidal, medial petiolate rhomboidal rounded acute: raceme elongate equal to petiols, peduncled and multiflore, bracts obovate obtuse biflore, calix smooth—Apalachian Mts of Virginia and Carolina, disc. 1825, flowers white, very distinct species.

3. AMPH. HETEROPHYLLA Raf. *monoica* Nutt. Stem twining filiform angular with reflexed hairs, leaves on short petiols variable but shining scabrous and ciliate, subequal but either ovate lanceolate acute or else ovate elliptical obtuse: raceme elongate, multiflore, bracts rounded striate, calix smooth—In the Alleghany mts. of Pennsylv. flowers white.

4. AMPH. ELLIOTI Raf. *monoica* Elliot. *Gl. monoica*? L. stem twining angular with reflexed hairs, folioles ovate lanceolate subequal, thin, acute, scabrous above, petiols long: racemes pendulous commonly sterile, calix hairy gibbose. Pods of imperfect flowers ovate one seeded—In Carolina, Virginia &c. Flowers white and violet. Doubtful sp. yet, since Elliot says in diagnosis *leaves glabrous*, and in description *hairy*! He confirms the existence of imperfect flowers in racemes, cultivated for these pods like *Arachis*, but Linneus says these subterranean flowers are solitary! It would be hard to say what Michaux, Pursh, Torrey, Hooker, Beck, Eaton &c mean by their *monoica*, which they do not describe, blending 4 or 5 sp. under that false name; most of them have all the flowers perfect and fertile.

5. AMPH. DELTIFOLIA Raf. stem twining with reflexed hairs, petiols short, folioles scabrous ciliate ovate deltoid, lateral oblique, medial rhomboidal: racemes short equal to petiols, erect pauciflore, bracts ovate acute striate—From Canada and Missouri to New Jersey, the most common kind and probably the *monoica* of many botanists, but without imperfect flowers; all with whitish petals, although many are abortive several Var. 1. *Incarnata*, 2 *procera* 8 feet high &c.

6. AMPH. CUSPIDATA Raf. stem twining angular hairy, hairs patent fulvous, petiols very long, folioles ample ovate cuspidate nearly smooth, lateral oblique: racemes elongate ramoso, racemules 3-4 flore, bracts ovate obtuse striate, equal to pedicels, calix smooth—Mts. Cumberland of East Kentucky, disc. 1823. Leaves large 3-4 inches, petiols 6-8 inches: flowers small, white.

All these plants are called *Pea-Vines* or *Binders*, and are much relished by cattle. They entwine over plants and shrubs, in woods and among rocks. All in my Autikon. Their blossoms are estival.

7. *LOBOMON ACUTIFOLIUM* Raf. Twining quite hispid, hairs adpressed, folioles equal ovate acute, glaucous and reticulate beneath: peduncles filiform 1-3flore, bracts ovate lanceolate, calyx smooth, pods pubescent—Ohio, Illinois &c: flowers minute monoical or dioical, commonly apetalous, sterile sessile, but fertile and pods with pedicels.

8. *LOBO SARMENTOSUM* Raf. *Glycine do W. Amphic. do* Elliot . . . Twining glabrous, folioles ovate acute, peduncles filiform triflore, calix villose, pods smooth—Carolina, flowers all apetalous and seeds grey, spotted with black.

9. *LOB. OBTUSIFOLIUM* Raf. Pilose, hairs spreading, twining stem, folioles elliptical obtuse or retuse, cuspidate glaucous, some ovate or rounded: flowers sessile, calix hirsute, pods sessie geminate pubescent—In Kentucky &c, monoical, flowers apetalous, upper ones sterile, 2-3axillary sessile.

10. *LOB. MONTANUM* Raf. *Glycine montana* Raf. atl. Journ. Dioical, smooth, stem erect flexuose, folioles ovate acute; peduncles uniflore, pods and calix smooth—On the rocks of high hills in the Alleghanies of Pennsylvania, Juniata and Sherman Valleys. Only semipeadal and root annual.

The fecondation of these plants is a problem, and their apetalous structure a great anomaly. All in Autikon except 8. They form a peculiar group *TETRODES* Raf. by their curious anomalies, with *Amphicarpa* and the 2 next foreign plants.

11. **GEOLOBUS FLAVUS** Raf. *Glyc. subterranea* L. Stem procumbent flexuose, petiols erect trigone, folioles oblong obtuse smooth: peduncles axillary drooping biflore, two bracts ovate incumbent over the 2 flowers—In South America and perhaps Florida?

I must add here for further discrimination another fine N. G. united as usual to *Glycine*, and akin to the above.

TRIENDILIX Raf. calix 4fid closed, only 3 petals concealed within it. Pods linear terete polysperm. *Perennial, twining, peduncles axillary, flowers minute.*

12. **TRIENDILIX CLANDESTINA** Raf. *Glycine do* W. Pers . . . stem twining, villose silky, folioles lanceolate, silky beneath, peduncles ternate uniflore—In Australia. Leaves with 3 folioles as in all the true *Glycine* tribe. *Triendilix* means three within the calix, abbreviation from *Triendokilix*, *Geolobus* means Earthpod. *Lobomon* is an ancient Greek name for some kind of peas or beans.

MONOGRAPH OF PELTANDRA.

I noticed this Genus as early as 1804, I ascertained it in 1816, and published it in 1819 in my Essay on 50 N. G. in *Journal de Physique* Paris. It has been adopted by many Botanists; Torrey doubted it in 1817, yet in 1821 he has admitted but misnamed it *Lecontea*, a double blunder, since there was another *Lecontea*! and my previous name was better. Beck in 1833 changed it again through ignorance of my previous claim to *Renselaria*. Each knew only of one type, while I have ascertained many:

they had been blended in *Arum* and *Caladium*. The whole tribe of Aroides was in utter confusion; but is rectified in my Flora Telluriana.

PELTANDRA Raf. meaning shield stamens, 1819. *Arum* L. & *Calla* Mx. *Caladium* Elliot, *Lecontea* Torrey 1824, *Renselaria* Beck 1833.

Spatha narrow involute tubulose, side split spadix inclosed quite geniferous, terete obtuse, pistils inferior, stigmas sessile capitate. Anthers confluent (sterile at the end of the spadix) peltate crenate multilocular on the sides. Berries globose unequal 1 to 5 ovate seeds. *Scapose leaves simple commonly cuspidate, root tuberosa*.

Remarks. This Genus includes several aquatic plants or growing in damp soils and meadows, while the other Aroides commonly avoid the Waters. They may be known by this peculiarity even out of bloom, as also by the cuspidate leaves. The berries are green and contain a jelly with commonly several seeds. but often one only by abortion. Those seeds were eaten by the Indians, even the leaves are edible when boiled; the roots are thick, and tuberosa, but not properly turnip like as in other Aroides. The flowers are vernal, and last only a few days in May or June, they do not bloom every year. Michaux reduced them to *Calla* that has mixt flowers and a style, because one sp. has a flat spatha as *Calla*; this may form a Sub Genus.

LEUCOSPATHA, Spathe cuculate, end dilatate, 4 to 5 seeds—**PELTANDRA**, spathe involute, end narrow, 3 to 5 seeds.

RENSELARIA, Ditto, Ditto, 1 or 2 seeds.

1. **PELTANDRA UNDULATA** Raf. 1819. Petiols equal to leaves striate dimidiate, leaves sagittate undulate oblong cuspidate lobes oblong obtuse, scape striate terete punctate of black, spatha subequal, base inflate, split in the middle, margin undulate, end narrow involute. In the Alleghany and Mattawan mts, also in New Jersey &c, it flowers in June, spathe lucid blackish green, margin yellow, spadix white, young petiols glandular, leaves 5 to 10 inches long. This was the type of my *Peltandra* having 3 to 5 seeds. It is hard to say which Authors have seen that species but blended it with the next. It was probably the real *Arum Virginicum* of Clayton and Linneus.

2. **PELTANDRA CANADENSIS** Raf. *Arum sagittatum foliis elongatis*, Charlevoix pl. canad. fig. 81. *Arum Virginicum* of many botanists, *Lecontea virg.* Torrey. *Renselaria virg.* Beck.

Petiols elongate terete not punctate, leaves oblong flat hastate cordate, cuspidate, lobes obtuse: scapes several subcarinate, spatha lanceolate involute, margin undulate—In Canada, New York, New England and Pennsylvania. This is the type of *Renselaria* having only 1 or 2 ripe seeds, easily known by flat leaves semipedal, long petiols not dimidiate &c.

3. **PELTANDRA LATIFOLIA** Raf. Petiols short dimidiate flat above, leaves broad triangular sagittate, undulate cuspidate, lobes divaricate obtuse; scapes several terete incurved, berries often one seeded—In the waters of marshes, ponds, creeks, in south New Jersey and Delaware, leaves often one foot long and broad: not rare there, but seldom found in flowers. It belongs to subgenus *Renselaria*, but is quite dis-

tinged from the last. The *P. Walteri* is very akin, but has acute lobes.

4. *Peltandra heterophylla* Raf. Petiols unequal terete, leaves variable oblong cuspidate, or ovateoblong hardly sagittate or nearly auriculate or base often entire oblique, lobes unequal rounded short or ovate obtuse—With the last in the same places, even near Philadelphia in the Schuylkill, but rare, seldom seen in flowers, berries 1-3 seeded, different leaves out of the same root.

5. *PELTANDRA HASTATA* Raf. *Arum Virginicum* Elliot. Petiols vaginated at base, leaves equal in length oblong, hastate cordate acuminate, lobes subacute; spatha oblong acute repand, spadix equal.—In Carolina and Florida, it blossoms in April there says Elliot, the berries have several seeds, and thus it is a *Leucospatha* like the next.

6. *PELTANDRA ALBA* Raf. *Calla sagittifolia* mx. *Caladium glaucum* Elliot. Leaves glaucous hastate cordate acuminate, lobes oblong obtuse divaricate, petiols elongate; scape short, spatha cuculate oval lanceolate, white, end dilatate—In Carolina and probably all over the southern States: Elliot says the berries are red and with several seeds. The white flowers and red berries will distinguish this; they are both green in the others. This will be the type of *Leucospatha* and may have some other peculiar characters in the flowers to make it a Genus—Thus I have fully ascertained 4 sp. in the North and 2 in the South; but there are 2 other doubtful sp. there.

7. *PELTANDRA WALTERI* Raf. *Arum sagittifolium* Walter, *Arum Walteri* Elliot. Leaves triangular sagittate, angles divaricate acute.

In Carolina, not well described, but very near *P. latifolia*, said to be larger than *P. hastata* with similar flowers.

8. *PELTANDRA ANGUSTIFOLIA* Raf. *Calla Virginica* Var. Michaux. Leaves hastate cordate narrow oblong, lobes obtuse, spatha elongate incurved—Virginia &c, in this sp. Michaux has blended probably the sp. 1, 2 and 4, but the narrow leaves and incurved spatha indicate a peculiar species.

MONOGRAPH OF LECHEA.

AND THE SUBGENERA *MENANDRA*, *EUDIEXA* &c.

Linneus had only two sp. of *Lechea*, having reduced to that Genus the *Menandra* of Gronovius. His *L. minor* and *major* figured in Amer. Acad. 3. tab. 1. have been applied at random by nearly all the botanists to any other Species, till Michaux who added 3 sp. and Willdenow *L. verticillata* of India, which I doubt to be of this Genus, as it appears to be strictly North American. I shall now increase it to 21 sp. and divide it into 3 subgenera that might perhaps become as many Genera.

The essential characters of this Genus were also widely mistaken. Linneus put it into triandria trigynia, altho' the stamens vary from 3 to 12, and there are not 3 styles, but a single trilobe sessile plumose stigma! The Capsule is not one seeded as stated by most of Authors, unless sometimes by abortion; but it has 3 or 6 seeds: nor is that capsule 3locular nor with double valves as stated by others, it is strictly unilocular, with 3 free placentas mistaken for valves, or partitions. The calix is not single

as stated, but commonly double, the outward of 2 sepals, being mistaken for bracts, altho' they persist in the fruit, and are quite similar to the extra sepals of the CISTIDIAN tribe to which this Genus evidently belongs, notwithstanding the reduced stamens and seeds. This Genus is in fact so near to *Anthelis* (*Helianthemum* T.) that the main distinction consists only in 3 petals instead of 5, and it is supposed that the original *L. major* of Lin. was also his *Cistus canadensis*! or a variety of it!

Characters of **LECHEA** if kept as a single Genus. Calix double and persistent, external bipartite seldom lacking, sepals narrower, internal tripartite. Petals 3 small narrow, equal obtuse and fugacious. Stam 3 to 12, filiform, anthers bilobe. Stigma large sessile capitate trilobe floccose or plumose or papillose. Capsule unilocular trivalve, 3 to 9 seeds inserted on 3 small free placentas, sometimes only one by abortion. *Small annuals or perennials with terete stiff branching stem, leaves ternate or opposite scattered simple entire and subsessile, flowers estival evanescent paniculate or racemose, not yellow*—Vulgar name Pinweed.

1. **MENANDRA**, Fl. Virg. of Gronovius. External calix with 2 short sepals or almost lacking. Stamens 6 to 9, seeds 1 to 3. *Leaves often ternate, and flowers racemose. Perennials.*

2. **LECHEA**, Ext. calix equal in length to the internal. Stamens 6 to 12, seeds 1 to 3. *flowers spicate paniculate, some stems sterile.*

3. **EUDIEXA** Raf. (well 2 external) Ext. calix longer than the internal. Stamens 3 to 6. Seeds 3 to 9. Chiefly annuals.

The mistakes about these plants have arisen from few Botanists seeing their anthesis or full bloom, which like many Cistides, only last a few hours towards noon: the petals soon after wither, and the stamens collapse or are glued to the stigma. But the characters now assumed on the persistent respective length of the calix, will always be perspicuous. I have specimens of all the described species.

MENANDRA.

1. *L. PULCHELLA* Raf. quite smooth, stem stiff virgate, leaves scattered long linear acute; flowers paniculate and lax in naked racemes, bracts none, ext. sepals subulate, internal ovate obtuse, petals elliptic obtuse incarnate, capsule obovate.—In the Pine barrens of New Jersey, probably extending South; probably the *L. racemulosa* of many Botanists, but not Mx. which is pubescent with ciliate leaves. It is a very pretty sp. when in full bloom in August, the calix being red inside, the petals incarnate the large stigma white. The erect stiff stem produces hundreds of flowers at once, it is about one foot high, and only branched above. Several varieties 1. *Minor*, only 2 to 4 inches high, panicle leafy. 2. *Elegans*, over a foot high, panicle fastigiate. 3. *Pyramidalis*. Branches pyramidal.

2. *L. CINEREA* Raf. (*L. thymifolia* Mx. &c) adpressed pubescent, cinereous fastigiate, leaves scattered narrow linear adpressed; racemes paniculate pauciflore subnaked, flowers canescent outside, sepals lanceolate acute, capsule oblong longer.—In Florida and Georgia: deemed *L. racemulosa* by Collins, easily known by its color, perhaps the real *thymifolia*?

3. *L. TERNIFOLIA* Raf. (Menandra ramis ter-

nis, Gronov.) Stem paniculate above, adpressed pubescent, leaves and branches mostly ternate cuneate acute ciliate nearly smooth; racemes paniculate lax nearly naked, peduncles elongate, capsules oblong—In Virginia, New Jersey and probably elsewhere. This must be the real *L. racemulosa* of Mx. who quotes Gronovius. Pedal, calix colored of red as in *L. pulchella*.

4. *L. FURFURACEA* Raf. Pubescent pulverulent, stem erect. branches fastigate above, leaves narrow linear scattered nearly obtuse; racemules terminal naked, pedicels unequal, ext. cal. subulate very short, internal rounded, capsules globose—In Kentucky and Illinois, 6 to 10 inches high. flowers greenish outside, with a yellow furfile. Nearest to *L. cinerea*, easily known by the mealy pubescence and globose capsules.

5. *L. LAXIFLORA* Raf. smooth, stem erect paniculate, branches lax, leaves scattered linear cuneate acuminate ciliate; racemes scattered lax, flowers remote naked, pedicels elongate, calix and capsules ovate—In New Jersey Pine Woods with *L. pulchella*, to which akin, difference in leaves chiefly, flowers green not red outside. Var *brevifolia* semipedal, fl. reddish, leaves shorter more cuneate hardly ciliate.

6. *L. TENUIFOLIA* Mx. Elliot or *L. verna* Raf. (*L. juncifolia* Walter) humble dumose pilose, stems assurgent, branches spreading, leaves scattered subulate linear, racemes paniculate divaricate; flowers remote axillary solitary, capsules globose large—said to grow on the R. Santi of Carolina, and to blossom earlier than any other in April and May, no external calix according to Elliot, yet very near to some *Eudiera* with long ext. calix.

7. *L. RECURVATA* Raf. Hispid assurgent, branches opposite and ternate, leaves broad oblong acute at both ends ciliate; racemes spicate recurvate unilateral, pedicels very short, sepals oval, capsules globose—In Carolina and Virginia, akin to *L. ternifolia* (perhaps the true *Menandra* of Gr.) leaves and fruit different, calix redish, seeds convex and concave.

LECHEA OR LEKEA.

8. *L. MUCRONATA* Raf, precis 1814. villosa Elliot 1820, major of Walter and Mx not Lin. —Villose, stem erect, sterile stems prostrate, leaves opposite and ternate below, chiefly lanceolate, mucronate, on short petiols; flowers in compound spikes axillary to foliaceous bracts, ext. sepals acute reflexed in anthesis, internal sepals obtuse, capsules ovate villose.—From New England to Carolina, the most common sp. but not the linnean *L. major* with leaves rough above, tomentose beneath and scattered flowers; which is the real *Cistus Canadensis*! Flowers subsessile, ext. sepals linear, adpressed in the fruit, internal sepals lanceolate, petals lanceolate obtuse, commonly 3 seeds oblong acute with an angle inside. Several varieties 1. *Simplex* my original sp. stem nearly simple, leaves oblong cuneate, bracts oblong. 2. *Ramosa*, branches spreading above, leaves ovate lanceolate, bracts lanceolate. Original specimen sent me by Elliot from Carolina. 3 *Sessiliflora*, leaves lanceolate, petiols very hairy, branches fastigiate, spikes axillary and short, flowers sessile. From Missouri. All perennials.

9. *L. HETEROPHYLA* Raf. *L. minor* Smith. stem paniculate above, adpressed pubescent,

leaves commonly ternate, lower obovate, subsessile, upper cuneate and linear petiolate acute smooth; racemes panicul. lax subnaked, pedicels equal to fl. Internal sepals lanceol. acute carinate, capsules ovate—Kentucky and Illinois in woods and glades, trigone, ext. sepals subequal linear. Several varieties, 1 *major*, 2 *minor*, 3 *parviflora*, lower leaves caducous, flowers small fuscate. It has no sterile stems. Perennial.

10. *L. GLOMERATA* Raf. smooth, branches short adpressed, leaves variable oblong, lanceolate or cuneate, petiolate mucronate; flowers axillary and terminal on short pedicels, glomerate, sepals ovate acute carinate, capsules subglobose—Apalachian mts. pedal, no sterile stems, calix trigone over the fruit, external sepals linear—Perennial.

11. *L. CORYMBOSA* Raf. stem erect rough, above pilose corymbose, leaves petiolate broad oblong nearly obtuse, pubescent, ciliate; flowers corymbose, pedicels equal to flowers, sepals round concave, ext. linear, capsules globose—Mts. Alleghany, 6 to 12 inches high, leaves small, capsules large with 3 to 6 seeds, discovered 1818.

12. *L. SURCULOSA* Raf. stem with spreading branches, sterile stems prostrate pilose, with leaves ternate ovatooblong acute ciliate petiolate branches smooth with leaves opposite and alternate smooth linear; flowers paniculate, pedicels equal, bracts subulate, ext. sepals linear, internal ovate acute, capsules ovate—In Pennsylvania on dry hills, the *L. minor* of some Authors, stem 3 to 6 inches, leaves and flowers small.

13. *L. REVOLUTA* Raf. minor of Lin. not of

Smith nor other Authors. Stem erect, branches opposite and ternate, leaves 3-4nate or opposite, lower ovate, upper linear lanceol. scattered petiolate, smooth above, pubescent beneath, margin revolute, flowers paniculate—Found by Kahn in Canada woody glades. This description is taken from Linneus altogether, and agrees very well with some specimens I have from the Alleghanies of Pennsylv. the flowers are small, the capsules ovate &c, Smith says *L.* blended others with this.

14. *L. VIRGATA* Raf. stem simple virgate pubescent, leaves scattered or 2-3-4 nate mixt, petiolate linear cuneate ciliate acuminate; racemes axillary short pauciflore, pedicels equal to fl. sepals ovate acute carinate, external linear, capsules ovate.—In the Allegh. Mts. pedal, var. 1. *Breviflora*, semipedal, lower leaves oblong, short, racemes very short 2-3flore. 2 *Bracteata* pedal, lower leaves oblong, racemes longer than leaves, base foliose; end 5-7flore. The sp. 9, 10 and 14 with carinate trigone calix deserve perhaps to form another subgenus *TROPENDRIA* Raf.

15. *L. FLORIDANA* Raf. smooth, diffuse ramosa, branches filiform, leaves scattered, minute linear, racemes paniculate pauciflore naked, pedicels long unequal, sepals and capsules ovate—Found by Mr. Ware in Florida, small subdichotome, few leaves and flowers; habit of *Eudiexa*, but the ext. calix equal in length, tho' narrower as usual: probably annual.

EUDIEXA.

16. *L. SECUNDIFLORA* Raf. smooth, stems diffuse paniculate, leaves scattered lax narrow linear, racemes subspicate, flowers remote se-

cund, pedicels short, ext. cal. double of the internal linear, internal silky lanceolate, capsules oblong—Discovered 1823 in the glades of West Kentucky, rare, 6 inches high, small flowers, petals white oblong obtuse, stigma red, 3 oblong seeds in the capsules. It blossoms in June and July. Annual. Is it *L. thymifolia* Smith? which is an *Eudiexa*! certainly not that of *Mx.* neither have the leaves like thyme.

17. *L. PAUCIFLORA* Raf. adpressed pubescent stem humble diffuse ramose, leaves scattered, slender, linear cuneate, imbricate rather obtuse, flowers few scattered extraxillary, pedicels short, sepals smooth, external a little longer, capsules globose—Near the Sea Shore in Long Island and New Jersey, small plant only 3 inches high, it blossoms in July. Annual.

18. *L. BREVIFOLIA* Raf. adpressed pilose, branches fastigiate, leaves scattered petiolate short, lanceolate or oblong ciliolate mucronulate; racemes erect, bracteoles linear lanceol. flowers secund, pedicels equal, ext. sepals not much longer, capsules ovate—Mts. Apalaches, semipedal, very distinct sp. by petiolate short leaves. Annual.

19. *L. UNIFLORA* Raf. Smooth, stem slender angular with few leaves, above naked, subuni-flore, leaves scattered adpressed narrow linear cuneate; sepals membranaceous, ext. sepals oblong obtuse not much longer, internal ovate obtuse, capsule globose about 6 seeded—Summit of the Alleghany Mts. of Maryland, disc. 1825, only 3 or 4 inches high, only 5 or 6 leaves and 1 or 2 flowers. Capsule commonly with 6 oval seeds.

20. *L. STELLATA* Raf. Pilose, stem erect nearly simple, leaves 3-4nate petiolate elliptic

mucronate, upper leaves alternate lanceolate: racemes foliose, pedicels shorter, ext. sepals very long, capsules ovatoblong—New York and Ohio, often mistaken for *L. villosa*, pedal, estival, sepals linear and ovate.

21. *L. SESSILIFLORA* Raf. adpressed pilose, branches diffuse virgate, leaves scattered, spreading, petiolate, linear ciliate acute; flowers axillary subspicate or glomerate sessile, ext. sepals linear not much longer, internal lanceolate. In Florida and Alabama, near to *L. pauciflora*, main difference leaves petiolate ciliate acute. Near also to *L. floridana*, but flowers sessile.

It would have been difficult to designate which of these plants may have been seen and blended with those of Michaux by our Botanists since Torrey, Beck, Nuttall, Pursh, Eaton, Elliot &c seldom describe those they have seen, and never noticed the peculiar characters of the calix, capsules and seeds, on which I have chiefly based my subgenera and species; most of which are very distinct, and not likely to be overlooked again, if my characters are duly attended to, and even more sp. may be detected.

As to *L. verticillata* of the East Indies, it is probably a peculiar Genus, being stated to have the habit of *Spermacoce*, with opposite leaves elliptic serrulate, smooth above, rough beneath, and the flowers verticillate. Is it a Rubiaceae with adherent ovary?

The *L. chinensis* of Loureiro is still more widely different, being a *Commelinea*! (of what Genus?) according to Smith and Dunal. The monograph of Smith in Rees cyclop. may be consulted, he has exposed the blunders of *L.* and expressed a wish for a better labor like

mine on this Genus, having only 6 sp. of it, and Dunal in Decandole 1824 has no more, he chiefly copies Elliot. We lack good figures of these plants, that with our Hudsonias chiefly represent the Cistian tribe in N. America.

If ever this G. must be again illustrated, let the monographer copy the original descriptions of all the Authors, and compare them. Mine are all original and chiefly out of living specimens.

The *L. minor* of Smith had sub corymbose flowers and carinate calix, being probably my *L. heterophylla*. That of Pursh and Dunal can hardly be identified by me : that erroneous name must be omitted. The *L. major* of Bigelow is *Anthelis rosmarinifolia*, in Decandole who makes a Subgenus *Lecheoides* of all our American *Anthelis*, see my monographs of *Hudsonia* and *Anthelis*. (*Helianthemum*.)

Lechea was dedicated to Prof. Leche of Abo by Linneus, it must be pronounced *Lekea* and perhaps spelt so. *Menandra* of Gronovius might have been adopted instead, although the meaning *moon stamens* does not properly apply.

END OF FIRST PART.

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*The Floral wealth in this wide land concealed,
Will be at last by learned care revealed.*

PHILADELPHIA:

PRINTED FOR THE AUTHOR AND PUBLISHER.

1836.

NEW FLORA OF NORTH AMERICA.

HISTORICAL SKETCH.

A complete history and biography of our Botanists and botanical writers, would form a very interesting preamble to a general Flora, but might be misplaced in this mantissa, besides occupying too much space. The history of orders, Genera and Species, or the account of their names, forms, qualities, cultivation &c. might be a work of itself, but shall be partly attended to in the descriptive parts: the medical and economical uses of 600 medical genera, have been already detailed in my medical Flora, to which I shall add at some future period a Supplement upon 200 additional medical Genera, since ascertained or elucidated.

It was my intention to insert here an alphabetical Catalogue of all our Botanists and their works or labors; I had collected ample materials for this; but as I hope to obtain additions thereto, I will delay it for another number of this work: meantime I shall be happy to receive any such information of all the Botanists who may yet be unknown to me.

In the last Century our Botanists were few and mostly foreign travellers. From 1800 to 1816 they had gradually increased, but from 1816 to 1836 for 20 years past, I have had the pleasure to see the lovely Science of Botany gradually spreading, and the number of Botanists greatly increased, chiefly in the North; while now this Science begins to be taught in schools, and thus acquires many votaries.

The Floras published last Century were chiefly Gronovius or Clayton's *Flora Virginica*, and Walker's *Flora Caroliniana*, both very

superficial; but Kalm, Bartram, Castiglione, Schoepf, Barton, Mason, Muhlenberg, Michaux, Cutler, Bosc, Kin, Denke, &c. had then begun their researches. The first general Catalogue of the North American plants then known was published in 1771 by Forster; the second by Muhlenberg in 1812: our first Flora by Michaux (editor Richard) came out in 1803, the second by Pursh in 1814; no other has since been attempted, except Nuttall's on Genera and the periodical compilations of Eaton, owing to the vast increase of materials, as Botanists began to settle themselves over the States, making the new attempt no easy task. But several local or Sectional Floras have been published that have greatly added to our general knowledge of particularly regions.

Among these must be particularly mentioned with praise.

Elliot—flora of the Southern States, under the modest title of sketch of Botany. 1816 to 1820.

Robin—flora of Louisiana, revised and improved by myself in 1817.

Torrey—flora and Compendium of the Northern States, 1826.

Beck—Botany of the Northern and Middle States, 1833.

Bigelow—Flora Bostoniensis.

W. P. C. Barton—Flora Philadelphica.

Hooker—Flora of the British possessions, or Canada and Boreal America, including New Siberia yet in progress.

Darlington, Florula Cestrica 2 editions.

Torrey—Florula or plants of upper Missouri collected by James.

Nuttall—Florula of Oregon Mts. collected by

Wyeth, Florida by Ware and his florula Arkanzica—Besides my own florulas Mandanensis, Texensis, Oregonensis, Arkanzica, Ohien-sis, Missouriica, &c. But the number of mere Catalogues has been much more numerous; they are of course superficial and full of mistaken plants or names yet they have been useful in enlarging our views of the range of plants, and the localities of the rare ones. They began last Century by Muhlenberg flora Lancastriensis, and Cutler of Massachusetts full of mistakes—The principal in this Century have been.

Drayton—plants of South Carolina.

Rafinesque—Florulas Delawarica and Columbica, 1804.

Barton—Florula Philadelphica.

Torrey—Flora of New York.

Green—Catalogue of plants of the State of New York.

Brereton—Flora of District Columbia.

Mrs Gambold—Florula Cherokensis, first female Botanical writer.

Riddell---Flora of the Western States, with some new Sp.

S Florula of Natchitoches.

Rafinesque—Florula Kentukensis, 1824.

Short and Eaton---Catalogue of Kentucky plants.

Gibbs---Florula of plants near Colombia.

Williams---Plants of Florida.

Schweinitz---Plants of North Pennsylvania.

Bradbury---Florula Missurica.

Hooker---Florula Islandica.

Tully---Plants of New Haven, Connecticut.

Muhlenberg---General Catalogue of North American Plants. 1812 and 1818.

Eddy---Flora plandomensis in Long Island.
Croom and Loomis---Plants of Florida.

Monographs of Families or Genera are far more useful than Catalogues, because they enlarge our knowledge of Species, and make us acquainted with them. Among these I must chiefly mention Schweinitz---Fungi and Hepatica---Carex and Viola.

Torrey—On Cyperacea.

Grey---On Rhynchospora.

Leconte---On Utricularia, Ruellia.

Dewey---On Carexides nearly 200Sp. deemed still a Genus.

Rafinesque---On Vitis. Trillium, Gentiana, Heuchera, Houstonia, Rosa, Lysimachia.

Michaux---On Oaks or Quercus.

Muhlenberg---On Willows or Salix.

Bosc---On Fraxinus. Nuttal, on Sarrazinia.

Muhlenberg, on Grasses.

Halsey, on Lichens.

Sylvas or Dendrologies are also monographs of our Trees and Shrubs ; they have been given by Marshall, Philadelphia 1784.

Castiglione, in Italian 1790.

Vangenheim. in Germany with figures.

Michaux, in France with figures, and a late compiled translation has lately appeared in New England with wood cuts.

My New Sylva or Supplement to our Trees and Shrubs, will be additional in this work.

Iconographical Works like those of Catesby, Abbot, Larmark illustrations, the English Botanical magazines &c. are too costly to succeed with us—Dr. W. P. C. Barton, flora of North America on this plan, could only extend to a couple of volumes and about 120 Species! His Medical Flora and that of Bigelow extended

only to a few selected medical plants—mine has 100 wood cuts—Brereton botanical Journal, a Horticult. Journal in Baltimore, another in Philadelphia by Landreth, have only reached one or a few numbers. Audubon in his splendid work on Birds, has given many inaccurate figures of Trees and Shrubs, similar to those of Catesby—The best figures were those of Michaux and Pursh, but those of Hooker now exceed them still. I have published few of my own; many engraved in 1807 for me, were mostly lost before publication. I have reserved my labors in that way for my *Icones rariorum* yet mpt. and my AUTIKON BOTANIKON or plan of Self figures by specimens: of which Grey's Grasses is as yet the only imitation with us. A splendid flora of Newfoundland was begun in France, but has not been completed.

The miscellaneous or partial labors on our Botany are very numerous, including tracts, essays, descriptions of single plants &c., scattered in the transactions of our learned societies, Journals and periodicals &c, to seek for them is often a task or difficult matter. Several monographs of New Genera and Species are thus scattered *Jeffersonia*, *Heterandra*, *Tullya*, *Lophactis*, *Polanisia*, *Nemopanthes*, *Collinsia*, *Clintonia*. Many may be found in Silliman's physical Journal.

Nuttal's Genera of N. America and Eaton's manual of Botany are two of the most striking and useful as general miscellanies. Eaton's has had the luck to go through several editions as a school book; but each Edition is different, enlarged or revised; yet very defective in general, and lacking nearly all my new plants.

Several elements of Botany by Locke, Rich, Comstock, Sumner, Nuttal, Grey, and others have been published for the use of Schools chiefly. None have yet made us familiar with the improvements of Decandole, Richard, Agardh &c. Lindley has been reprinted. My improvements in philosophical Botany will be recapitulated in the Introduction to my *FLORA TELLURIANA*.

My own miscellaneous works are not few, New Genera and Species, 1808 in Mitchell's Med. and Phil. repository. Elements of Somiology—Analysis of Nature—Reviews of Pursh, Nuttal, Eaton, Elliot, Bigelow &c. Decads of new plants 1818—50 New Genera of plants 1819—Neogenyton or 66 New Genera 1825 Annals of Nature 1820.—medical flora 1828 to 1830—Atlantic Journal 1832 with 150 N. G. or Sp.—Herbarium Rafinesquianum 1833.

Botanical remarks and novelties in the Brussels Annals of Science 1820—New plants in Mirror of Sciences 1814—Precis des Decouvertes 1814 &c., &c.

In fact I have been accused of having scattered too much my botanical discoveries and labors; but I mean now to concentrate them in this work. Nuttal's rare plants of Florida and 83 new of various parts, with Asa Grey 4 rare plants of New York are miscellaneous labors like mine.

Our Botanists besides writers may be divided into Collectors, Travellers, Amateurs and Horticulturalists.

Those who have written but little, or merely some sketch, are Baldwin, Croom, Thomas, Aikin, Conrad, Oakes, Peck, Houghton, Schoolcraft, Waterhouse, Locke, James, Halsey,

Emmons, Cooper, Torrey, Leavenworth, Mitchell, Pickering, Boykin, Short, Peters, H. H. Eaton, Loomis, Cooley, Clinton, Booth, Leitner, the two brothers Green and Leconte with some others. Several are yet living and may do more hereafter.

Those who have never published any thing, altho' they collected Herbals, and were practical Botanists, are chiefly Collins, Miller, Wray, Pitcher, Hall, Vanvleck, Lyons, Herbemont, Habersham, Squib, Enslen, Boykin, Williams, Hitchcock, Hingston, Ingalls, Simmons, Griswold, Gates, Whitlow, Knevels, Steinhauer, Gaissenhauer, Durand, Griffith, Fisher, Mac Williams, with many others mentioned by Elliot, Hooker and Eaton as having helped their labors. These collectors are often very useful to the others by imparting specimens, localities and facts: their number is increasing, and several may yet become writers or improvers.

It is from such that I have received much help by gifts or exchanges of specimens, new facts and observations. I have reckoned particularly among my friends and assistants, Collins, Durand, Miller, Short (2 brothers and a sister) Walton, Hall, Carr, Hingston. Mac Williams, Vanvleck, Gaissenhauer, Ward, Mease, Bradbury, Kin, Ridgely, Mrs. Holley born Austin, Hart, Crocket, Limner, Duval, Lawrence, Knevel. &c.

But I have received also many specimens from professed Botanists, Muhlenberg, Torrey, Beck, Schweinitz, Elliot, Cutler, Eaton, Bradbury, Brickell, Halley. Short, Eddy &c. all American Botanists, chiefly by exchanges of my own or purchases; besides some American plants received from foreign Botanists

Decandole, Sheperd, Haworth, Tratenick, Seiber, Moricand, Bory, Swainson, Romer, &c.

Botanical travelers who merely come to explore our Plants in order to send them to European Gardens or Herbals, are also numerous : the fruits of their exertions are chiefly made known to us by European Writers. Such were Kalm, Mason, Michaux, Vanderschot, Castiglione, Bosc, Palissot, Turpin, Acosta, Richardson, Goldie, Drummond, Douglass, Macnab, Enslen, Lyons, Kin, Bradbury, Rustan, Berich.

Among our native traveling collectors, I must mention Bartram, Lewis and Clark, James, Schoolcraft, Baldwin, Peters, Cozen, Ware, Wyeth, Gates, Houghton, Pitcher, Walton, &c. who have often explored far regions, and discovered many new plants.

The distant regions of Origen have chiefly been visited by Makenzie. Langsdorf, Scooler, Douglass, Wyeth, Nuttal, Walton &c. While the Regions of Florida, have been explored by Bartram, Roberts, Williams, Cozen, Kin, Baldwin, Ware, Croom, Gates, Leitner, &c. But both as well as Texas will afford novelties for many years to come, and I have myself many of them to describe in this Work, received from various quarters,

Amateurs as Horticulturalists, or friends of Science, or Patrons of explorers, rank also among the promoters of Botany ; I may mention among those known to me or who have helped my researches, Clinton, Forrest, Mease, Adlum, Marshall, Clifford, Shultz, Carr, Walsh, Betton, Haines, Sitgraves, Mrs. Wallace, Mrs. Betton &c : many more exist all over the United States ; Stephen Van Rensselaer has been a great patron of Eaton : Macclure and Collins of various Botanists.

Lastly general Works on Botany are indispensable to all those who wish to know well the plants of these and other consimilar regions. The works of Linneus, Willdenow, Persoon, Vitman, Romer and Shultze, Sprengel, Decandole, Lamark, Martyn, and Smith in Rees Cyclopaedia, profess to describe all the known plants of the earth; and altho' they all lack many yet, they give us the gradual knowledge of the improving Science.

In Loudun Cyclopaedia of plants we find only the plants cultivated in England, in Dumont Botaniste Cultivateur those in France. In Aiton Hortus Kewensis many American plants were first described, and others are now yearly in the Botanical Register of Lindley, Bot. magaz. of Hooker.

But as many of our plants have been mistaken elsewhere, or blended with akin foreign plants, it is even often necessary for the exact Botanist to consult the original works on the plants of the Antilles, Europe, Sibiria and Japan. The floras Jamaicensis of Brown, Swartz, Lunan hortus Jamaicensis, Gmelin flora Sibirica, Thunberg flora Japonica, and the floras of England and France, must occasionally be studied to verify our plants. Many new sp. have been mistaken by them for ours.

In all these writings there is something to glean or to learn. Thus the correct Botanist has an ample field even in comparing Books, ascertaining Synonyms, similarities and diverities. He must have a rich Herbarium besides or else many to study and consult. How few of our Botanists take this trouble? they prefer compiling, copying errors and misnomers. How few visit the great Herbals of Muhlenberg, Nut-

tal, Torrey, Elliot, Schweinitz, and my own . . . now either deposited in public institutions, or accessible to all. Torrey and myself at any rate, are ever ready to communicate with Botanists, answer enquiries, or solve difficulties. Botanical compilations are most useful when they include all the previous plants; but our American Compilers are always deficient, because they neglect through various motives to collect all the published information; thus the plants of Bartram, Lewis, Robin, Castiglione, Brickell, Bosc &c with my own, have often been omitted.

The best Herbals or Collections of our floras, are besides mine, those of Torrey in New York, Elliot in Charleston, Beck in Albany, Bigelow in Boston, Short in Lexington Those of Nuttall, Schweinitz, Baldwin, and Muhlenberg are preserved in Philadelphia, chiefly at the Academy of Natural Sciences. My friend Durand is now collecting here an extensive American Herbal. That of Collins was very valuable, and is now added to mine. Others less rich in species are scattered chiefly in Boston, New Haven, New York, Baltimore, Charleston, Columbia, Washington, New Orleans, Cincinnati &c. But some families of Plants are very rare in these Herbals, not being easily preserved, such as Palms, Yucas, Cactides, Fungides.

Few are aware how difficult it is to collect an extensive American Herbal with many rare plants; those made in limited localities or gardens are easy enough to acquire; and they are useful to students; but Herbals of all the States and Regions for the learned, with notes, remarks, compared foreign specimens . . . are acquired only by many years of travels and re-

searches, exchanges and purchases. I calculate that mine containing over 10,000 species and 50,000 specimens, has cost me nearly \$ 2000 in actual expenses of time, money, travels, paper, boxes, correspondence, transportation, books of reference &c.

Other Botanists acquire fine Herbals at the risk of their health and life, Botany having also its martyrs; among whom I will mention Lyons, Pursh, Berrich, Baldwin, Conrad, H. H. Eaton, Walton, Ward, Hart, Drummond, Douglass &c who have fallen victims to their zeal in arduous travels, or from diseases contracted by their labors: although some did perhaps fall victims to alcohol rather than Botany, like Pursh . . . and others (Schweinitz and Berrich) were rather Victims of Tobacco! both foul poisons and destroyers of human life. Botanists are however generally sober and healthy, the pursuit of this Science is calculated to improve their habits and health. Baldwin, Waterhouse, and Conrad were victims of Phthisis and improper food; Botany probably lengthened their lives, as it has mine after finding out how to overcome this disease by my medical knowledge of our plants.

In voyages by Sea or Steamboats, some Botanists have been wrecked like myself, losing their collections, and not always so happy as to escape even with life like myself in 1815. I have had also some narrow escapes on the Ohio. Lherminier lost all his collections like myself in Carolina.

The rewards for all these dangers and expenses are scanty as yet with us. We have few professorships of Botany, and this useful science is too much neglected in our Schools.

Botanical works must even be printed at private expense, as have been most of mine (except my medical flora) and the sales do not pay the expences. We often meet besides with envy or detractors, scorn or neglect. We must therefore find our own reward in the self-satisfaction of having done well, and deserved if not obtained due credit, also in the pleasures inherent in collecting, studying and describing the gifts of Flora, besides the grateful kindness of some congenial friends or well wishers.

Nothing is more unkind, and yet how common, than to hear myself assailed with the questions, *why do you not give us your new plants? why are they not found by everybody? . . . !* This perversity of ideas and feelings, would be best answered by saying in ironical style, *why do you not give me your money? and value my rare plants? or why are you lazy or blind?* I am tired to repeat—Go to the mountains and glades, every month of the year, go where I found them at the same season and you will find them. Spend \$500 in the pursuit, if you will not buy my specimens—However one half of my new plants are already in the hands of Botanists, having sent them or exchanged or sold to 20 of them. Short, Riddell, Hart &c have found again several of my Western plants, those of Robin will be found in Atakapas and Texas, those of Kin in the peninsula of Florida &c.

A crowd of rare plants of Michaux, Pursh, Nuttall &c are unknown to most of our Botanists. Many plants described by European Botanists Linneus, Aiton, Lamark, Decandole, Hooker, Lindley, Wildenow &c, are equally rare with mine, and unknown to many of our

Botanists. They were chiefly found by foreign travellers, collectors or gardeners and sent to Europe. Kalm, Kin, Noisette, Hingston, Drummond, Lyons, Bradbury &c found many such in their remote explorations, and so have I. Whoever therefore neglects my discoveries is either jealous of them, or unable to distinguish plants. But careless Botanists are often blind to disparities and overlook those rare species, I did so myself once and deemed with Muhlenberg that 15 species of our *Lactucas* were all *L. elongata* ! thus blending and overlooking distinct sp. So they do to this day, and then they say they cant see them !

NORTH AMERICAN NEOPHYTON.

I shall dedicate the second part of this flora to describe some of my most remarkable New Herbaceous Plants either new Genera or new Species, reserving the new Trees and Shrubs for the NEW SYLVA of the third part. They shall be enumerated at random rather than by monographs, as I shall refer to them in my future Monographs and natural arrangement. I possess specimens of the whole, and they are all figured in my AUTIKON and Icones rariorum by those numbers here employed.

201. ODOGLOSSA Raf. meaning *toothed ligule*. A new Genus near to *Coreopsis* and *Vernasolis*, but differing by the neutral rays, and male floscules mixt in the disk.

Perianthe double, both octophylous, the internal colored. Phoranthé convex, chaffs setaceous and few. Rays 8 neutral, rudiment of Ovary linear bidentate, tube flat imperforate,

ligule or lamina elongate venose, end bifid, sides unidentate. Disk with many florets, male and perfect mixt, Ovary obovate hardly bidentate, florets tubulose 5dentate, stamens free at the end, style hardly bifid. In male florets ovary entire, anthers often quite free. Seeds obovate black hardly bidentate. *Perennial, habit of Vernasolis, but root not creeping.*

202. *ODOGLOSSA HETEROPHYLLA* Raf. stem virgate, naked above, pauciflore sulcate smooth, branches very long uniflore, naked polygonal; leaves rugose beneath, radical petiolate cuneate obtuse entire, inferior petiolate pinnatifid, lobes oblong obtuse 3 to 7, the last larger, medial leaves sessile oblong entire. External perianthe ovatooblong obtuse nervose, the internal elliptic—In Alabama, Georgia and West Tennessee, rare, stem pedal or more, root fibrose, flowers vernal? rays yellow nearly one inch long, perianthe yellowish. I have not yet found any synonym to this curious plant.

203. *LAXANON* Raf. Name of Dioskorides for a *Lapsana*, to which Genus it is akin, in family of *GLOSSANTHIA* or *CICHOGRACEA*, but differs by naked seeds and simple perianthe.

Perianthe simple 5 to 7 parted, without calicule. Ligules 10 to 15, seeds ovatooblong striate naked, pappus none, phoranthé naked. *Habit of Krigia.* One type.

204. *LAXANON PARVIFLORUM* Raf. smooth, stem ramose terete, branches incurved, leaves graminiform linear lanceolate, entire obtuse, upper ones nearly opposite; flowers terminal, pedicels elongate unequal filiform pubescent, 3 to 5 subumbellate, perianthe smooth, sepals ovate acuminate—Sent me from Alabama, pedal diffuse, flowers yellow very small. This is evidently a very distinct plant.

205. EPATITIS Raf. a name of Dioscorides for *Eupatorium*. A Genus akin to it and *Mikania*, but without calicule and the florets reduced to the minimum number of 2 or 3.

Perianthe simple 2 or 3 sepals, no calicule, floscules 2 or 3 longer tubular 5fid, seeds compressed linear, pappus simple pilose, phoranthé naked. *Habit of Mikania and Cacalia*.

206. EPATITIS OBLIQUA Raf. smooth, stem angular erect, leaves petiolate obliquial cordate or subsagittate, (one side rounded, another sagittate) acute dentate, flowers corymbose fasciculate, peduncles pubescent, bracts linear, sepals of perianthe cuneate oblong obtuse flat—sent me from Oregon, pedal and higher, flowers white and small. It is akin to the *Cacalia alpina* of Siberia, but the leaves are not properly cordate, nor flowers with 5 florets.

207. ROPALON Raf. name of Teophrastus for a *Nymphaea*, to which it is akin, but lacks the petals.

Calix 6phyle, no petals, anthers many subsessile, stigma with 12 or more rays truncate. *Remainder and habit as in Nuphar*.

208. ROPALON SAGITTATUM Raf. *Nymphaea sagittifolia* Wild. Elliot, *N. longifolia* Mich. &c—leaves oblong obtuse sagittate, fruit ovate.—In Carolina and Florida in waters, leaves 6 to 8 inches, elongate, flowers-estival yellow.

209. LOBELIA CLADLONESA Raf. smooth, stem erect angular, with short branches in the middle, leaves all linear acute adpressed entire: flowers racemose adpressed, capsules subinflated equal to pedicels—sent me from Alabama, 1 or 2 feet high, flowers blue estival size of *L. inflata*, leaves one inch or more, bracts

subulate oft equal to pedicels, segments of calix lanceolate acute unequal.

210. *LOBELIA PARVIFOLIA*, R. smooth, stem procumbent ramose diffuse flexuose, leaves few small, lower spatulate obtuse subentire, medial oblong subserrate, upper linear entire acute, flowers subracemose lax, pedicels longer than leaves, segments of calix linear—Apalachian mts. flowers small bluish. Seen alive in gardens spontaneous. Annual.

211. *LOBELIA PANICULATA* R. stem striate naked above, leaves pubescent obovate spatulate obtuse repand, mostly radical, only 1 or 2 on stem; raceme ramose subpaniculate, flowers scattered lax, bracts subulate equal to pedicels—mts. Alleghany, rare, annual, stem bipedal, flowers white small. Probably a deviated sp. from *L. claytoniana*, disc. 1818.

212. *LOBELIA INCURVA* R. glaucous pubescent, stem erect branched, leaves linear cuneate obtuse; flowers axillary racemose, pedicels incurved subequal to leaves, segments of calix lanceolate acute—Florida, annual, pedal, flowers small and blue, akin to *L. Kalmi* and consimilar blended sp.

213. *LOBELIA FALCATA* R. glaucous smooth, stem simple, leaves long linear falcate acute entire, lower subcuneate; raceme lax leafy, flowers equal to leaves, calix linear acute—found on Lakes Erie and Ontario, very near to the true *L. Kalmi* of Canada, but with longer falcate leaves, flowers larger pale blue, probably a deviation, collected 1825.

214. *LOBELIA FISTULOSA* R. stem round smooth fistulose slender, leaves scattered remote linear acute revolute adpressed; fl. ra-

cemose, bracts subulate glandular longer than pedicels, segments of calix linear very long equal to corolla—sent me from Alabama, pedicel, flowers blue middle size, corollas elongate, capsules turbinate.

I have several other N. sp. and Var. of this pretty Genus; see my monograph; my *L. nirca* descr. 1820 will also be there again.

215. *DIPSACUS CUNEIFOLIUS* Raf. stem angular aculeate, lower leaves petiolate, cuneate obtuse, crenate, upper leaves sessile cuneate or lanceolate acute entire: head spherical, involucre unequal falcate subulate aculeate, chaff spinose not hooked—In some valleys of the Alleghany mts. and in some glades of Kentucky, disc. 1818, pedicel, annual, very different from *D. sylvestris* and *fullonum*.

216. *TROPITOMA* Raf. anomalous or peboric Genus, sprung from *Desmodium leucanthum*! calix urceolate bilabiate, upper lip bidentate, lower tridentate, corolla not papilionaceous, petals 5uneq. patent, one superior larger or vexillum round emarginate, 4 inferior smaller equal oblong obtuse. Stamens 10 monadelphous, filaments free above divaricate subequal, anthers small round. Ovary stipitate oblong compressed, style lateral subulate, stigma simple acute. Pod with 1 or 2 articulations obliquial ovate, one seed oblong compressed in each. *Habit* of *Desmodium*. One type, the name means *cut keel*.

217. *TROPITOMA PARADOXA* Raf. erect, leaves few, folioles 3 on long petiols ovate rounded acute scarcely pubescent, pale beneath, flowers terminal 1 to 3—Discovered 1821 in the hills of central Kentucky, semipedal, annual, flowers white. Rare.

218. *MENYANTHES LATIFOLIA* R. folioles subpetiolate ample ovate or obovate entire subacute, scape subequal to leaves with a lanceolate sessile leaf, raceme lax, bracts short ovate obtuse—Found in Oregon by Walton with the next: both akin to *M. verna* of my med. flora. Robust plant, perennial, ultrapedal.

219. *MENYANTHES TRIDENTATA* R. folioles sessile small obovate tridentate, scape much longer than leaves and naked, bracts ovate—Oregon, pedal, perennial?

220. *CHLONANTHES* (*Chelone*) *TOMENTOSA* Raf. leaves subsessile broad lanceolate acuminate serrate, base entire, tomentose and grey beneath; fl. axillary and terminal fasciculate nodding—In the mts. of Virginia, stem bipedal, leaves 4 to 6 inches long, 1 or 2 broad, fl. white, perennial, rare. I have modified into *Chlonanthès*, the absurd name of *Chelone* that meant *turtle*! as if a flower was a reptile!

221. *ASARUM PARVIFOLIUM* R. stemless, leaves twin radical on long petiols, pilose broad reniform emarginate, peduncle erect, flower large tubular smooth tridentate—On the top of mts. in North Carolina, small plant only 2 inches high, leaves half uncial perennial, flower dark purple, as large as in others.

222. *ASARUM FURCATUM* R. caulescent furcate pubescent, leaves twin reniform subacute, peduncle erect, flower campanulate trifid pubescent—Apalachian mts? leaves four times as large as the last, yet flowers equal in size and same color, but deeper divided. Perennial.

223. *ASARUM MEDIUM* R. stemless pubescent, leaves opposite on long villose petiols, cordate reniform acute, peduncle short flexuose villose,

calix base villose, end smooth, tripartite, segments lanceolate—From Missouri and upper Lakes, perennial, semipedal, flowers cinereous or fuscate; the *A. canadense* differs from all these by smooth reniform leaves, calix reflexed &c.

224. *ASARUM ROTUNDIFOLIUM* R. caulescent erect villose, leaves 4 opposite rounded cordate, flower terminal subsessile nodding smoothish campanulate trifid.—Brought by Walton from Oregon mts. near *A. europeum*, which differs by 2 broad reniform leaves, fl. peduncled trilobe &c, perennial, flower dark purple.

225. *HEDYOTIS GENICULATA* R. smooth, stem geniculate 4gone, leaves fasciculate lanceolate acute, margin scabrous, pale beneath; fl. axill. solitary, segments of calix linear equal, tube of corolla filiform twice longer than calix—Was ioto hills of Kentucky, semipedal, annual, leaves uncial, flowers purple, their limb campanulate 4fid, apparently a true *Hedyotis*, although I did not see the ripe fruit; not a *Stelmotis* the calix being equal.

226. *GALEOPSIS MONTANA* R. dwarf glaucous, leaves few remote petiolate ovatooblong acute serrate pilose, flowers terminal only 1 to 3 calix not pungent—Summit of Oquago mts. near Utsiantha Lake in New York, small annual, only 3 to 4 inches high, flowers incarnate, Probably a deviation from *G. tetrahit*, but aspect very unlike.

227. *EUSTACHYA* vel *LEPTANDRA OPPOSITIFOLIA* Raf; leaves opposite sessile ovate acute (not acuminate) serrulate smoothish, equal to internodes, spike simple—mts. Apalaches of Virginia, perennial, sesquipedal, flowers white small. very distinct from the narrow leaved, whorled sp. of this Genus.

228. *MYCTANTHES* (mixed flowers) Raf. anomalous or peloric Genus occasionally formed by some *Asters* and *Solidagos*—Difference, flowers often concrete or coalescent, with ligules and floscules intermixt, perianthe imbricate unequal foliaceous. I have noticed several types. Is it a diseased state? but the plants were healthy.

225. *MYCTANTHES PUNICEA* R. like *Aster puniceus*, but stem simple, 2-3flore, leaves lanceolate—observed near Philadelphia, flowers terminal purplish.

230. *MYCTANTHES LATIFOLIA* R. stem simple uniflore, leaves sessile elliptic acuminate subserrate, flower terminal sessile purplish—collected in the Alleghany mts. bipedal.

231. *MYCTANTHES AXILLARIS* R. similar to *Solidago nemorosa*, but flowers axillary and solitary, yellow—mts. Alleghany, pedal.

233. *ALISETA* (Plantain) Raf. Radiate Genus near to *Arnica*—Perianthe in double series, each of ten spreading folioles. Phoranth flat alveolate, chaffs carinate long acute. Floscules tubulose 5fid sterile. Ligules or rays about 20 fertile tridentate narrow. Seeds linear, pappus simple deciduous. *Habit of Arnica, scapose, uniflore*—But very different Genus by calix, chaffs, sterile florets &c. It is nearer to the next Genus *Peritris* in some respects. Single type.

233. *ALISETA PLANTAGINEA* R. radical leaves lanceolate or cuneate entire hirsute acute, scape terete smooth, with a single subulate scale, uniflore. folioles of perianthe ovate lanceolate smooth—Sent me from Florida, probably biennial, root short with many fibres, leaves 2 or 3 inches long, scape 6 inches, flower large 2 inches, rays yellow, disk fuscate.

234. PERITRIS (around triple) Raf. Another Genus akin to *Arnica* distinct by habit and triple perianthe—Perianthe in triple series, outer shorter with few lax folioles, the 2 inner equal and adpressed. Phoranth flat naked. Rays few tridentate. Seeds oblong compressed pubescent, pappus simple. *Habit of Jacobea, caulescent corymbose*.—Perianthe nearly like *Aliseta* with the addition of a calicule, but chaffs lacking and habit unlike.

235. PERITRIS OVATIFOLIA R. puberulent, stem erect subangular lower leaves petiolate ovate serrate acute, petiols winged, upper leaves sessile ovate lanceol. serrulate or entire; corymb ramose racemose, peduncles erect, bracts subulate, folioles of perianthe lanceolate—Florida and Alabama, pedal, perennial, fl. yellow, perianthe smooth, calicule or outer pubescent.

236. ARNICA BREVICAULIS Raf. smooth, scape, leaves obovate and cuneate, obtuse, unequally crenate and laciniate, scape shorter than leaves and with flowers umbellate, bracts lanceol. wooly in the axiles, peduncles unequal, some very long, striate uniflore with 1 or 2 subulate bracteoles, perianthe lanceolate, wooly at the base.—Sent me from Alabama, stem only 4 inches, leaves 6, flowers large yellow, few rays, pappus white, seeds oblong angular smooth. This appears a real *Arnica* near *A. nudicaulis*, the perianthe being simple.

237. BELLIS PARVIFLORA Raf. stem branched diffuse, leaves sessile oblong acute entire scabrose, peduncles terminal long naked, rays linear—In Kentucky on rocks, rare, annual, semipedal, leaves small, flowers white estival very small half size of *B. integrifolia*.

238. BELLIS NUTANS Raf. stem simple uni-

flore striate, leaves remote sessile cuneate acute entire pilose ciliate, flower nodding—In the glades of West Kentucky, annual, flowers vernal white same size as *B. integrifolia*, which grows by millions in those glades, where I found them all in 1823. These plants really belong to the *G. Bellis* and not *Eclipta* as deemed by Sprengel, nor *Brachycome* of Cassini, genus based on *Bellis aculeata* and *ciliaris* of Australia, to which Lessing has wrongly united *B. integrifolia*. In order to contrast my species I must add this and also the Texan species.

239. *BELLIS INTEGRIFOLIA* Mx. and Amer. Authors. *Eclipta* do Spr. *Brachycome xanthocomoides* Lessing—smoothish, stem branched multiflore erect, branches 1 or 2 flore, lower leaves petiolate spatulate obtuse, upper sessile cuneate acute not ciliate, flowers erect rays oblong—All over the Western States, Ohio, Indiana, Illinois, Missouri, Kentucky, Tennessee &c in glades, vernal white flowers, stem 6 to 15 inches high erect, 3 to 12 flowers, not seen by Pursh, nor Nuttall till he went to Arkansas, a proof that a very common plant may escape notice if you do not visit the localities in due season. Several varieties 1 *pumila* 3 inches high, 3 flowers only, 2 *elata*, sesquipedal, multiflore, 3 *carnea* flowers of a blushing color. &c, all annuals.

240. *BELLIS CILIATA* Raf. *B. integrif.* Hooker bot. mag. 3455. Pubescent, stem erect multiflore, lower leaves petiolate spatulate obtuse base ciliate, upper sessile oblong acute ciliate, peduncles naked erect, rays cuneate—annual, found by Drummond in Texas, and probably extending to Louisiana and Arkansas, blended

with the last by Hooker, his description including both, his figure appears the texan plant which has been sent me by Torrey, and I describe original specimens of Drummond; it has also a var. *triflora*, with leaves all acutish and only 3 flowers. The folioles of the perianthe are lanceolate acuminate in all the sp. not linear as Hooker says, the seeds are obovate pubescent.

241. *PARTHENIUM ANGUSTIFOLIUM* Raf. stem virgate angulate smooth, above rough, lower leaves petiolate narrow cuneate or oblong crenate obtuse rough, upper leaves sessile ovato-blong; flowers corymbose globose, fol. of perianthe ovate rounded acute—In the barrens or glades of West Kentucky, 2 or 3 feet high, petioles long, leaves 6 to 8 inches long, 1 or 2 broad. Very distinct from the 3 next sp. all are estival and perennial.

242. *PARTHENIUM PUMILUM* Raf. stem dwarf, striate, smooth, lower leaves petiolate obovate crenate obtuse rough, upper cuneate sessile nearly entire acute; corymb glomerate, fol. of perianthe ovate acute rough—In the mts. Warrioto or Cumberland, stem smooth striate semipedal, leaves rough small, flowers white.

243. *PARTHENIUM SINUATUM* Raf. stem sulcate elate smooth, leaves nearly glabrous rugose, radical ample petiolate ovate deltoid sinuate laciniate, obtuse, stem leaves sessile amplexicaule ovate repand sinuolate; corymb sessile glomerate, fol. of perianthe rounded—Mts. of Virginia, probably blended with the next by Authors, but by no means *integrifolium*! large leaves, lower often 10 inches long decurrent on the petioles, flowers few globular whitish. Stem commonly 3 feet high.

244. *PARTHENIUM AMPLECTENS* Raf. *P. integrifolium* L. and Authors? Stem angular rough elate, leaves all rough ovate oblong amplexicaule serrate acute, corymb lax, fol. of perianthe ovate rounded acute carinate.—Glades of Kentucky, 2 to 4 feet high, leaves 3 to 6 inches long, lower hardly attenuate at base, flowers whitish. *P. integrif.* is a name illusive and to be abolished, it was given by Lin. in contrast with *P. hysterothorus* with multifid leaves, that now is a peculiar Genus. The Linnean sp. figured in Dillen and Plukenet had leaves ovate crenate hirsute, lower with carinate petiols, upper sessile, flowers snowy white, tip of perianthe black, and may still be different from all mine, found in Virginia, might be called *P. dillenianum*?—The sp. of Elliot is still somewhat different, it may be called *P. elliotanum*? stem 1 or 2 feet striate roughish, leaves rough toothed ovate lanceolate; lower sessile, upper amplexicaule—as near to *P. angustifolium* as to this. See 280.

245. *URTICA VERNA* Raf. nearly smooth, stem simple slender, leaves remote opposite petiolate acuminate laciniate serrate, the lower cordate, medial ovate. upper lanceolate; male spikes inferior shorter than petiols, female fl. glomerate above, glomerules nodding geminate peduncled.—Kentucky and other Western States, in woods, flowers vernal in may, pedal, leaves small, a true *Urtica* with male fl. 4 parted 4andre. Var. *gracilis* very slender virgate, leaves small none cordate.

246. *OXALIS RUPESTRIS* Raf. stem erect angular rufous pilose, leaves glaucous smooth, folioles obcordate, sinus obtuse, peduncles longer than leaves 3-5flore, sepals lanceolate, pe-

tals retuse obovate.—On the cliffs of the River Kentucky, 8 to 12 inches high, flowers large pale yellow, estival.

247. *OXALIS CESPITOSA* Raf. creeping, cespitose pilose, stems assurgent, petiols filiform, folioles obcordate ciliate, sinus acute, peduncles filiform longer than leaves 2-3 flore, pedicels equal to flowers, bracts linear, petals obovate double of calix, capsules pilose—Glades of West Kentucky and West Tennessee, abundant, vernal, found in May and June 1823: near to *O. lyoni*, 3 to 5 inches, forming small tufts, leaves small, flowers large one inch broad pale or lemon color.

248. *CAPSELLA ACUTIFOLIA* Raf. stem simple smooth, radical leaves short pinnatifid, pinnules ovatooblong dentate acute, stem leaves sagittate lanceolate very acute subentire amplexicaule, raceme naked, silicules short deltoid hardly emarginate, pedicels long filiform spreading.—In the Alleghany mts. pedal annual with white flowers and estival, as all the sp. of this Genus of Mench, Ventenat and Decandole, who admits of only one sp. *C. bursa*, with 4 varieties *minor*, *integrif.* *coronopif.* *apetala*; but I have 8 or 10 sp. in my herbal, whereof 6 from N. America, and many more exist perhaps in Africa and Asia.

249. *CAPSELLA INTEGRIFOLIA* Raf. Var. do Dec? stem slender simple radical leaves cuneate acute, attenuate in petiol at the base, quite entire, stem leaves oblong acute sessile not sagittate entire, silicules deltoid emarginate—Hills of Pennsylv. and Kentucky, semipedal, certainly as distinct a sp. as can be! leaves not even toothed as in the next, nor sagittate above.

250. *CAPSELLA DENTATA* Raf. dwarfish stem simple nearly naked radical leaves petiolate cuneate or obovate toothed, stem leaves 1 or 2 sagittate linear, raceme lax elongate, silicules deltoid truncate shorter than pedicels.—In mts. Alleghanies, 3 or 4 inches high only, akin to last, but leaves toothed and upper sagittate. Is it the Var. minor of some botanists?

251. *CAPSELLA BIFIDA* Raf. several stems, radical leaves oblong toothed, stem leaves sagittate entire glaucous roughish, racemes elongate, silicules oblong base acute end bifid, pedicels subequal.—In Pennsylvania glades, pedal, annual, very distinct by silicules longer than broad and almost bifid, no runcinate leaves &c.

252. *CAPSELLA FURCATA* Raf. all leaves spatulate oblong obtuse entire or hardly toothed, silicules broad furcate, pedicels equal.—In Canada and Europe, semipedal, distinct by the peculiar silicules broadly obdeltoid, wider than long, and uniform leaves, quite obtuse.

253. *CAPSELLA AMBLODES* Raf. all leaves pinnatifid, acute, pinnules often angular, silicules, shorter than pedicels, oblong cuneate obtuse, emarginate—sent me from Europe as a variety of *C. bursa*, probably also in N. America, annual dwarfish 3 to 4 inches high only, quite peculiar silicules, and uniform leaves.

254. *CAPSELLA BURSA* Raf. non Auct. *Thlaspi bursa pastoris* L. and most of our botanists. Radical leaves pinnatifid runcinate, pinnules entire, stem leaves oblong sagittate dentate, silicules shorter than pedicels deltoid triangular base and corners acute, hardly emarginate.—In Europe, introduced in fields and the roads in N. America, pedal and sesquipe-

dal, nearest to *C. acutifolia*, chief difference in pinnules entire less acute broader, silicules quite triangular with acute angles.—It is probable that these plants are deviations sprung from each other, but some are really native of wild localities and not introduced: to deem them mere varieties would be preposterous, since they differ as widely in leaves and fruits as any acknowledged species of *Sinapis* or *Lepidium*, which ought on such false principles be made but single species. I have not yet met in America the *C. coronopifolia* of Europe having leaves with narrow remote segments. The monstrous deviation called *apetala* by Opiz and Decandole, is evidently an incipient New Genus formed in Europe, not even of this family, having no petals, 10 stamens, instead of 4 petals and 6 stamens! I call it *ORIZIA BURSOIDES* Raf.

255. *CALYSTEGIA RIPARIA* Raf. sepium of Amer. bot. not L. nor Europe. Procumbent, twining, leaves cordate oblong, lobes rounded seldom acute, peduncles uniflore terete very long, calicule longer than calix ovate concave obtuse—annual, on the margins of rivers, streams and marshes in New Jersey and New York, flowers estival white incarnate. Mistaken by our botanists for the *Convolvulus sepium* of Europe, *Calystegia sepium* of R. Brown and Pursh; a smaller plant not climbing, leaves and flowers smaller.

255. *BRUNELLA MICROPHYLLA* Raf. stem pilose geniculate dwarf, leaves very small smooth subentire obtuse, lower ovate on long petiols, upper oblong subsessile, heads subsessile globose or ovate, bracts scariose reniform venose ciliate acuminate—summits of mts. in Allegha-

nies and Kiskatom mts. only 2 or 3 inches high, leaves not half an inch, flowers small purple vernal. Annual like all the species?

257. *BRUNELLA SESSILIFOLIA* Raf. stem terete branched rough above, branches brachiate, leaves sessile narrow lanceolate acute entire smooth, margin rough, heads oblong, bracts cordate acuminate ciliate, calix ciliate colorate—Florida sesquipedal, leaves 2 or 3 inches long, heads elongate 3 inches long, calix red, flowers purple, handsome sp. near *Br. intermedia* of Europe, but leaves entire and smooth.

258. *BRUNELLA PETIOLARIS* Raf. smooth, stem simple subterete, leaves on long petiols, lower obovate or cuneate entire obtuse, upper lanceolate acute subdentate, heads ovateoblong short, bracts ciliate reticulate cuspidate cordate, calix smooth cuspidate—In Kentucky pedicel, radical leaves smaller, upper leaves long narrow triangular, flowers estival as in nearly all.

259. *BRUNELLA HIRSUTA* Raf. Hirsute rough, stem simple 4gonal, leaves remote petiolate crenate, lower ovate obtuse, upper elliptic oblong subacute, heads short truncate, bracts hirsute ciliate acuminate, calix ciliate acute—Illinois and Missouri, pedicel, flowers bluish purple.

260. *BRUNELLA CINEREA* Raf. creeping villose cinereous, radical leaves petiolate round and ovate, obtuse crenate, upper leaves oblong or linear nearly entire margin involute, heads oblong sessile, bracts reniform acuminate ciliate, calix hirsute at the base—Florida, Alabama, Wasatch mts. and hills of Kentucky, biennial, vernal very distinct, although akin to last and next. Stem semipedal, leaves small uncinate, heads 2 inches long, calix as in most sp. upper lip 3dentate, lower bifid ciliate.

261. BRUNELLA HETEROPHYLA Raf. smooth erect. leaves petiolate subcrenate repand, radical ovate rounded obtuse, on stem ovate or oblong, heads sessile ovate short—on mts. Alleghany, akin to the last, but annual estival erect smooth, green not ash color.

262. BRUNELLA CORDATA Raf. stem erect simple red, pilose above, petiols ciliate, leaves smooth ovate acute subentire pale beneath, lower cordate serrate, heads oblong sessile with 2 oblong leaves, bracts reniform reticulate ciliate—Alleghany mts. pedal, fine species, calix red, corol purplish blue, estival.

263. BRUNELLA RETICULATA Raf. stem erect smooth, leaves petiolate elongate ovatooblong entire, acute at both ends, heads on a hairy peduncle, oval short, bracts reticulate acuminate ciliate, calix smooth—in Ohio, Kentucky &c, fine species, sesquipedal, leaves 3 or 4 inches long, spike short hardly over one inch, calix with lips 3dentate and bifid as usual, but quite smooth. Akin to the last but differs by entire leaves and short heads not sessile.

264. BRUNELLA ROSEA Raf. dwarf, stem decumbent hairy above, leaves petiolate smooth oblong and lanceolate acute subentire, lower crenate, heads oval subsessile, bracts scarious reticulate cordate ciliate acuminate—in the Turkey mts. of Alleghanies, only 2 to 4 inches high, stem 4gone, angles with a few hairs, leaves uncial, heads uncial or less, flowers estival of a fine rose color different from all the others. Very distinct sp. only slightly akin to *Br. microphylla* in habit, but nothing else, calix ciliate. A variety has shorter heads and more crenate leaves, stem nearly erect. Var. *breviflora*.

265. **BRUNELLA OBTUSIFOLIA** Raf. stem erect hairy above, leaves petiolate ovate obtuse entire or subrepand, heads oblong subsessile bracts scarious colored ciliate reniform acuminate; calix colorate ciliate—in Pennsylvania &c, more similar to *Br. vulgaris* of Europe than any other, pedal, estival, perennial, bracts and flowers red. These 10 sp. of *Brunella* (mis-called *Prunella* by error of the press) are usually blended (when seen by our botanists) with the *Br. pennsylvanica* of Muhlenberg: to unite such diversities is preposterous. The real *pennsylvanica* which is the *vulgaris* of others differs from this my *obtusifolia* by creeping roots, ascending stems, leaves ovatooblong acute toothed at the base, &c. I have even yet some other American and European blended sp. in my herbal, or at least striking varieties, some with white flowers.

266. **BUCHNERA MISSURICA** Raf. rough pubescent, stem adscendent base hirsute, leaves opposite and alternate crowded imbricate lanceolate subentire, radical ovate, upper ones small subulate squamulose remote, flowers in short spike, alternate at base, bracts subulate short—Glades of Missouri and Illinois, pedal, perennial, calix urceolate, tube of corolla slender strait.

267. **BUCHNERA ANGUSTIFOLIA** Raf. stem virgate terete nearly smooth, naked above, leaves remote linear obtuse entire roughened by white hairs, flowers scattered sessile in the spike—in Alabama, sesquipedal, capsules globose in calix ovate 5lobed. These two sp. are quite distinct from *B. americana*, see 298.

268. **CUPHEA ALBIDA** Raf. stem simple humble pauciflore, leaves petiolate ovate lanceolate

hardly viscose pubescent entire obtuse, flowers axillary subsessile, calix hispid striate, petals white cuneate small—in the Alleghanies of Pennsylvania, only found once in 1833, north of Carlisle, annual, semipedal, quite distinct from *C. viscosissima* having many purple flowers, stem much branched and clammy, leaves narrower lanceolate &c.

269. *COMANDRA OBOVATA* Raf. stem ramose angular striate, leaves oboval subobtuse, umbellules 3-5 flowered, pedicels equal to flowers, bracts obovate equal to pedicels—mts. Alleghanies pedal. The *Thesium umbellatum* of L. has been well described as a N. G. *Comandra* by Nuttal, but he neglected the species thereof, and so have done all our botanists, there are now 7 or 8 sp. of this G. and I will distinguish 5 sp. of it, all blended by our careless Authors. All have white estival flowers.

270. *COMANDRA ELLIPTICA* Raf. stem angular hardly branched, leaves broad oblong elliptic acute, umbellules sub 5 flowered, pedicels shorter, bracts lanceolate equal to pedicels—common, pedal, estival, probably the *C. umbellulata* of Nuttal and most of our Botanists.

271. *COMANDRA OBTUSIFOLIA* Raf. stem angular branched above, leaves imbricate narrow oblong obtuse, umbellules 3-5 fl. pedicels very short or wanting, bracts subulate—Ohio to Illinois, semipedal.

272. *COMANDRA MEDIA* Raf. stem terete striate ramose, leaves broad oblong acute, umbellules 1-3 flore, pedicels equal, no bracts—in New Jersey and Virginia, pedal.

273. *COMANDRA CUNEIFOLIA* Raf. stem slender subangular, leaves lax cuneate nearly acute umbellules 3-5 flore, pedicels very short, bracts

ovate short—West Kentucky, discovered 1823, pedal. I possess all these sp. which are such wide deviations as to be sp. rather than varieties.

274. *HYDRASTIS TRIFOLIA* Raf. stem flexuose three leaved, 1 flore, leaves ample, lower petiolate, 2 upper sessile, reniform 3-5lobed, unequally serrate ciliolate, lobes ovate acute, glaucous beneath, flower sessile at the third leaf—West Kentucky, over one foot high, lower leaf 6 inches wide. This Genus was thought monotype, if this is not a N. sp. it is a very singular deviation of form, as *H. canadensis* has always 2 leaves not ciliate &c. Flower white early vernal.

275. *GERANIUM LENTICULUM* Raf. Pilose, stem erect slender sulcate branched, leaves opposite and alternate on long petiols 5-7parted segments linear lanceolate entire acute, peduncles biflore shorter than petiols, calix sepals lanceolate nervose aristate, seeds lenticular pubescent—West Tennessee and Kentucky, pedal, flowers small, petals purple, estival, annual, in glades.

276. *GERANIUM PEDATUM* Raf. smooth, stem diffuse filiform striate, leaves alternate on long petiols small pedate 7-9fide, segments linear, medial cuneate trifid, peduncles very long, filiform 1-2flore, calix sepals ovate enerve acuminate, seeds oblong smooth.—Glades and Prairies of West Kentucky and Illinois, semipedal, annual, flowers small purple vernal.

277. *ISANTHUS PUMILUS* Raf. smooth, stem dwarf hardly ramose, leaves subpetiolate lanceolate acute hardly trinerve, pedicels uniflore short, equal to calix, shorter than leaves, calix ciliate—Glades of West Kentucky and Tenn-

essee, annual estival, only 3 to 4 inches high—leaves not ciliate, but the calix instead.

278. *ISANTHUS PUBESCENS* Raf. quite pubescent, stem branched, leaves sessile trinerve lanceolate acute, peduncles biflore curved subequal to leaves longer than calix—Mts. Wasioto or Cumberland of East Kentucky, annual, pedal. This is nearer to *I. ceruleus* of Mx. my *Is. ciliatus* which has however leaves ovate lanceolate ciliate, short peduncles and is nearly viscid.

279. *ISANTHUS MULTIFLORUS* Raf. smooth, very branched, leaves sessile linear lanceolate uninerve, peduncles multiflore, pedicels shorter than calix—with the last in the Wasioto hills, semipedal, annual. Thus this monotype American Genus is now increased by me to 4 species; they are all estival and commonly grow in Limestone soils, I have perhaps another doubtful from Texas, with obovate leaves.

280. *PARTHIENIUM HISPIDUM* Raf. stem flexuose sulcate hispid, hairs white, lower leaves obovate base acute, the lowest on a long hispid petiol, upper leaves sessile oblong and ovate, base truncate, all acute with large unequal teeth ciliolate, slightly hispid on both sides, flowers corymbose glomerate sessile tomentose pale fulvous—another sp. of this American Genus, from the Glades of Arkansas and Texas humble, hardly over a foot high, with stiff white hairs, only one radical petiolate leaf, few leaves all different in size and shape, flowers fulvous white, perianthe with ovate obtuse sepals.

281. *TRIOSTEUM CONNATUM* Raf. perfoliatum and majus of some bot—stem sulcate pubescent, leaves connate ovate rhomboidal acuminate undulate, rough above, tomentose beneath

axils 1 or 2 flore, flowers sessile calix unequal linear pubescent—in the Alleghany mts. bipedal, corol rufous red subequal 5lobed, berries purple. Of this Genus our botanists admit only two species *perfoliatum* and *angustifolium*, but the first also called *majus* by some contains many blended species, and it is hard to say which is meant by each, as few give original descriptions: this is the sp. of Elliot. I shall increase this Genus to 8 sp. quite distinct, they are all perennial estival plants, with stem simple and axillary flowers, commonly found in limestone or sandy soils. The roots of all are medical and febrifuge, see my medical flora.

282. *TRIOSTEUM MOLLE* Raf. entirely villose soft, leaves subconnate broadly oblong acuminate undulate repand, villose above, tomentose beneath, axils triflore, flowers subpedunculate—Received from Missouri, bipedal.

283. *TRIOSTEUM VILLOSUM* Raf. stem striated villose, leaves sessile ovate acute base attenuate, smooth above, villose beneath, axils multiflore upper sterile, flowers sessile, calix lanceolate—in the sandy soils from Maryland to New Jersey, bipedal, or tripedal corol short dark purple, berries purple.

284. *TRIOSTEUM PUMILUM* Raf. stem dwarfish sulcate villose, leaves sessile oblong elliptic acute, villose beneath, axils uniflore, flowers sessile calix villose long linear—on the Appalachian mts. of Virginia, only one foot high or even less, quite distinct from *Tr. angustifolium*, probably the *minus* of some botanists.

285. *TRIOSTEUM ANGUSTIFOLIUM* L. Elliot &c, stem hairy, leaves subconnate lanceolate spatulate acuminate slightly scabrous, axils

uniflore, flowers peduncled—in Kentucky, Tennessee and Apalachian mts. of Carolina, 2 or 3 feet high, corol yellow, berries red. I collected this in the glades of West Kentucky,

286. *TRIOSTEUM HISPIDUM* Raf. stem flexuose striate hispid, leaves sessile ovate spatulate acuminate smooth ciliolate, axils uniflore, flowers sessile, ovary hispid, calix smooth linear lanceolate—in the glades of West Kentucky with the last, but quite distinct by broader smooth leaves quite sessile, corol orange color.

287. *TRIOSTEUM LEVIGATUM* Raf. entirely smooth, stem fistular, leaves sessile ovate rhomboidal acute at both ends, axils 2-3flore, flowers sessile, berries safron color—on the Apalachian mts. of Georgia and Alabama, seen alive in gardens, quite distinct by perfect smoothness of stem and leaves, flowers small orange color, berries also or nearly safron color.

288. *TRIOSTEUM OBOVATUM* Raf. stem fistular tomentose, leaves sessile obovate broad ample acuminate tomentose beneath, axils 2-3flore fl. sessile, berries red—from New York to Illinois, the most common sp. in the Western States, often mistaken for the *Tr. majus*, quite different from my *connatum* by sessile obovate leaves, larger than in any other, stem 3 to 4 feet high.

289. *PHRYMA MEDIA* Raf. subpubescent, leaves petiolate equally serrate, lower cordate, upper ovate acute, last pair sessile, bracts subulate shorter than calix—in Kentucky, annual and estival like all the species. Our botanists admit of only one, but it offers so many deviations that I have collected 3 incipient sp. which I add with the real type of *Phr. leptostachya*.

290. *PHYRYMA PUBESCENS* Raf. pubescent, leaves subsessile ovate or elliptic, subcordate acuminate ciliate unequally crenate, last pair entire, bracts subulate equal to calix—Alleghany mts. pedal, flowers purplish.

291. *PHYRYMA PARVIFOLIA* Raf. smooth, leaves all petiolate ovate oblong equally serrate bracts shorter than calix—Alleghany mts. pedal, leaves small uncial, flowers white.

292. *PHYRYMA LEPTOSTACHYA* L. & C. smooth, leaves difforme lower petiolate ovate base acute deeply serrate, upper sessile ovate often entire, bracts equal to calix—the most common kind, from New York to Carolina, 1 or 2 feet high. If all the above are mere varieties of this, they afford a fine illustration of incipient species forming under our eyes in our woods.

293. *THECANISIA* Raf. a N. G. of *Spiraea* tribe, near to *Filipendula*—cal, 5fid. persistent reflexed, petals 5, stamens few 12 to 15, pistils 3-5 stipitate with a style, stigma capitate. Fruit 1 to 5 thecas unequal stipitate oblong 1-3seeded. *Herbaceous perennial plants with lobed or palmate leaves subpinnate, stipulate, flowers paniculate.*—The essential character besides habit is found in the stipitate unequal pistils and fruits, the types are *Spiraea lobata* and *discolor*, but others probably belong here, and I add two. The name means unequal thecas.

294. *THECANISIA LOBATA* Raf. Spir. do Authors leaves subpinnate smooth, folioles 3lobed, the last 7lobed, lobes lanceolate doubly serrate, panicle cymose compound—from Carolina to Alabama in hills, large plant 3 to 4 feet high, flowers rose colored.

295. *THECANISIA PONPUREA* Raf. stem stri-

ate, leaves smooth, pinnate palmate triparted, medial lobe large petiolate 3-5lobed, lobes oblong acute, laciniate dentate, stipules oblong serrate, panicle lax naked—in Tennessee and West Kentucky, 2 or 3 feet high, flowers purple, probably blended with the last, chiefly distinct by lobes and panicle.

296. *THEC. ANGUSTIFOLIA* Raf. stem striate flexuose, leaves palmate rugose, reticulate beneath, 5 to 7lobes lanceolate acuminate unequally serrate, stipules foliose laciniate, panicle lax.—Mts. of North Carolina and Georgia, very distinct by narrow lobes, flowers purplish.

297. *THEC. DISCOLOR* Raf. *Spirea* do P. & c, stem angular sulcate, leaves subtrifoliate, lobes ovate acuminate unequally serrate, white tomentose beneath, middle foliole cordate trifid, some small pinnules interjected ovate sessile, stipules small, panicle interrupted coarctate—Apalachian mts. a beautiful sp. 1 or 2 feet high, flowers white.

298. *BUCHNERA LEVICAULIS* Raf. stem virgate fistular quite smooth, above naked angular, leaves remote narrow lanceolate entire acute rough, spike short flowers alternate—Florida, a very distinct sp. stem 2 feet high very slender and smooth, leaves small uncial opposite sessile, spike uncial, flowers few small sessile alternate, bracts ovate acute half length of corolla. This with 266 and 267, increase to 4 our N. Amer. sp. they have probably all been blended in *B. americana* which is quite distinct by roughness and opposite flowers &c. They are all estival, growing in glades out of woods, and dry black in herbarium.

299. *ECLIPTA* of L. a good Monograph of this Genus is much wanted, I shall attempt

it for our N. Am. sp. increased to 6, while our botanists know only 2 or 3, and blend half a dozen with *E. erecta* of South America, quite different from ours. These plants are estival or autumnal, all annual, with a similar habit of opposite sessile leaves, flowers often axillary and geminate. All have the perianthe biserial, many narrow rays and the seeds naked; with a bristly phoranthé, whereby they differ from *Bellis*, and the habit is totally unlike; but some sp. are stated to have besides a small bristly pappus, such are *E. procumbens* of Elliot and my *E. ciliata* fl. Lud. which therefore approximate to *Verbesina* and *Galinsoga*, and are perhaps two peculiar Genera *Paleista* and *Cacotanis*. As to *E. brachypoda* Mx. which was *Amellus carolinianus* Walter, with pentandrous florets, no one else has seen it since, not even Elliot, and it will perhaps be found also a peculiar Genus or a *Paleista*.

300. *ECLIPTA LONGIFOLIA* Raf. stem erect slender weak trichotome nearly smooth, leaves sessile long lanceolate, acute at both ends, uninnerved remotely serrate, nearly smooth, flowers erect axillary and terminal 2 or 3 together, peduncles unequal hispid, sepals of perianthe unequal oval or lanceolate acute ciliolate—a very distinct sp. from *E. erecta* mistaken for it by nearly all the botanists, growing from Florida to New Jersey near streams, lately found by me near Philadelphia at the mouth of the Schuylkill. Stem 2 or 3 feet high, leaves remote 4 to 8 inches long, hardly one broad, flowers whitish autumnal, seeds brown 4gonal, obovate. I add for contrast the others *E. erecta*!

301. *ECLIPTA DUBIA* Raf. *E. erecta* Pursh,

Elliot &c erect dichotome strigose, leaves sessile lanceolate base attenuate, remote serrate, triplinerve, flowers geminate, peduncles long, sepals of perianthe ovate acuminate—Virginia to Florida in gravelly soils, flowers estival: thus very different from last, but I have not seen it, it may have been badly described, therefore is dubious.

302. *ECLIPTA FLEXUOSA* Raf. *E. erecta* L. &c. Stem erect nearly simple hirsute subflexuose, leaves sessile lanceolate undulate unequally serrate triplinerve, flowers 2 or 3, peduncles wooly, sepals of perianthe ovate—in Guyana and South America, biennial 2 or 3 feet high, thus totally unlike the two above.

303. *ECLIPTA TINCTORIA* Raf. *E. erecta* Wild. Pers. &c. stem erect strigose, leaves sessile oblong lanceolate remote serrate—in Asia and Egypt, used to die black, certainly different again from all the American sp. but requiring a better description.

304. *ECLIPTA SIMPLEX* Raf. stem erect simple strigose above, lower leaves ovatooblong obtuse petiolate, upper oblong or lanceolate sessile acute uninerve, subentire, hardly strigose nearly smooth, flowers solitary axillary or terminal, sepals of perianthe ovatooblong acute—sent me from Alabama and Tennessee as *E. procumbens* although quite erect. A small sp. semipedal, with few leaves and flowers, leaves 1 or 2 inches long.

305. *ECLIPTA SULCATA* Raf. stem erect trichotome sulcate nearly smooth, leaves narrow lanceolate sessile acute, subserrate in the middle, nearly smooth, peduncles geminate unequal hispid, sepals of perianthe ovate lanceolate acute—Louisiana, sent me by Riddell as

the *E. procumbens*? nearer my *longifolia*, but leaves only 2 or 3 inches long, stem sulcate, sepals broader but not acuminate as in *E. dubia*.

306. *ECLIPTA DICHOTOMA* Raf. *E. erecta* Nuttall in Collins herb. stem erect dichotome smooth, leaves small sessile lanceolate and oblong acute entire or subserrulate substrigose, flowers 2 or 3 axillary and terminal, peduncles short subhispid, sepals ovate acute. Arkansas, found by Nuttall, mistaken also for *E. erecta*, quite distinct, stem slender 3 or 4 feet high, leaves remote uncial, sometimes small leaves on the lower peduncles, imitating short branches, flowers small smooth, seeds brown oblong sub 4gone.

307. *ECLIPTA PUMILA* Raf. dwarf hispid rough, stem simple erect 1-3 flore, leaves sessile lanceolate acute or obtuse subentire, flowers axillary solitary, peduncle short, sepals oblong —Mts. Cumberland of East Kentucky, 1 or 2 inches high only, perhaps a deviation of *E. simplex*.

308. *ECLIPTA NUTANS* Raf. stem decumbent or assurgent flexuose trichotome rough above, leaves sessile strigose, oblong lanceolate or cuneate hardly serrate acute uninerve, on the branches linear lanceol. entire, flowers axillary and terminal geminate nodding, peduncles very short, sepals ovate lanceolate acute—in Kentucky also the banks of the Ohio and Potomak, pedal or less, leaves small uncial, flowers very small. This has probably been the *E. procumbens* of Mx and many botanists, but not of Elliot and others. It has some varieties 1 *pauciflora*, assurgent nearly simple few flowers, 2 *diffusa* leaves often cuneate below, most-

ly oblong. This is the only prostrate sp. I have seen, and it is often assurgent.

309. **PALEISTA** Raf. Perianthe uniserial 8-10 sepals unequal serrate fimbriate, rays numerous 24-30 short linear 2dentate, floscules 4fid 4androus, phoranth with fringed bristles, seeds 4gone tuberculate, crown with a thick margin and a pencil of short bristles. *Procumbent, radicaunt branched, leaves opposite, flowers commonly geminate*.—Thus this *G.* differs from *Eclipta* in perianthe, chaff and seeds.

310. **PALEISTA PROCUMBENS** Raf. *Eclipta* do Elliot not others. Procumbent strigose trichotome, leaves sessile triplinerve long lanceolate remotely serrate, peduncles elongate, 1 or 2, sepals of perianthe lanceolate acute serrate fimbriate—in Carolina and Florida in damp soils, flowers small white estival and autumnal: certainly quite distinct from my *Eclipta nutans*, nearer to *E. longifolia* in some things. I add to this the doubtful *E. brachypoda* not seen by me, but to contrast them.

311. **PALEISTA?** **BRACHYPODA** Raf. *Ecl.* do. *Mx &c* Amellus Carolin. Walt. prostrate divaricate, leaves lanceolate nearly entire, peduncles 1-2 very short, sepals oval lanceol. floscules 5andre—in Carolina &c perhaps a peculiar *G.* or subgenus to be called *Brachypoda prostrata*!

312. **CACOTANIS** Raf. Perianthe conical imbricate, with many rows of sepals, many rays, chaff bristly, seeds compressed notched crowned by a few small bristles. *Leaves alternate, flowers terminal*.—I united this plant to *Eclipta* in 1817 by a mistake, the habit is totally unlike our *Ecliptas*. It differs from all

the genera blended in *Verbesina* by many rays and bristly seeds, from *Galinsoga* by the pappus not paleaceous &c. The generic name means *bad herb*.

313. *CACOTANIS CILIATA* Raf. *Eclipta* do fl. lud 214. Stem erect terete smooth, leaves alterne sessile remote linear smooth ciliate thick—in West Louisiana, 2 or 3 feet high, flowers few terminal one inch broad, rays white, disk yellow. Autumnal. Smell like *Cicuta*, taste acrid, deleterious.

314. *CLIPTERIA* Raf. Perianthe nearly uniserial 8-10 unequal sepals, phoranthé convex bristly, rays none, florets crowded, seeds naked. *Dichotome, leaves alternate, flowers terminal geminate*—very distinct Genus known at first sight from *Eclipta* by alterne leaves, and flosculose flowers. The name means *deficient around*.

315. *CLIPTERIA DICHOTOMA* Raf. stem erect smooth dichotome, branches biflore, leaves sessile oval oblong acute nearly entire uninerve smooth, peduncles geminate elongate, sepals of perianthe ovate long acuminate—Sent me anonymously from West Tennessee and the Chacta Country, stem bipedal, leaves and peduncles uncial, flowers green and small. I had first called it *Eclipta levigata*, but it appears a peculiar genus by habit, even if there should be short rays, my specimens have none, but the dry *Ecliptas* seldom show them. Could this be the *Galinsoga parviflora* of Mg. Catal. mentioned by no one else? it is certainly not the peruvian plant.

316. *DIPLOSTELMA* Raf. Radiate, perianthe oblong turbinate imbricate sepals unequal, margin scarioso external short. Rays

few oboval, floscules few tubular, phoranthé naked, seeds oblong smooth crowned by a double pappus, external short paleaceous scarious, internal bristly longer. *Annual ramose, leaves alternate, flowers terminal*—a pretty little Genus near *Bellis* in habit, quite distinct by few rays and seeds. I find it under the name of *Acticarnopus* (in Collins herb) Genus unknown to me and the name cant apply, the seeds and not the fruit being stellate. My name means *a double crown*. I have 3 sp. of it.

317. *DIPLOSTELMA PUMILA* Raf. dwarf erect ramose strigose, branches angular uniflore, leaves sessile entire, lower cuneate or spatulate obtuse, lower linear cuneate acute, sepals of perianthe lanceolate acute rays about 5.—Texas and Arkanzas a small annual plant 2 to 4 inches high, with many slender branches and leaves, flowers estival, rays apparently white obtuse subentire, floscules 5 to 8 only, seeds and pappus fulvous. Found by Nuttall in Arkanzas.

318. *DIPLOSTELMA RADIANS* Raf. strigose erect, branches filiform pauciflore, lower leaves petiolate spatulate obtuse entire, upper few linear acute, sepals lanceolate cuspidate rays obt. 8—collected by Drummond in Texas, 6 to 8 inches high, flowers smooth, white, rays cuneate 8 to 10, floscules fewer 4 to 7.

319. *DIPLOSTELMA FILIFORMIS* Raf. erect, branches filiform rough, much divided, branchlets naked uniflore, leaves entire sessile, lower cuneate obtuse, upper subulate linear short, sepals lanceolate fringed at the end, rays about 4—collected in Texas by Drummond, sent me by Torrey without name, 6 to 8 inches high, leaves small, reduced to scales above, sepals more

scariose fewer, rays 3 to 5, floscules 4 to 5.

320. *LAXANON DIVERSIFOLIUM* Raf. quite smooth, stem and branches flexuose, radical and lower leaves narrow pinnatifid segments oblong unequal remote falcate, upper leaves graminiform obtuse entire, umbels 2-3flore, peduncles unequal smooth, filiform, sepals of perianthe ovateoblong obtuse—in Arkansas, collected by Nuttall, found in Collins herb. among the *Krigias* as a *N. G.* not named: it is a second sp. of my *G. Laxanon* see 204. Habit of a *Krigia*, lower leaves similar 4 or 5 inches long, stem pedal, leaves narrow 2 or 3 inches long, the 2 last subopposite forming a kind of involucre to the small umbellule, seeds ovate oblong striate.

321. *BAPTISIA* Vent. &c. This fine Genus of N. Amer. plants had been blended with the African *Sophoras* and *Podalyrias* till lately. Even now it includes 3 or 4 distinct Genera! Our compilers had only 8 sp. Nuttall had added 3 hardly congeneric, I shall add some others, and thus we shall have 15 sp. but now distributed in 4 Genera of which I will give short monographs. They are *Baptisia*, *Ripasia*, *Lasinia* and *Pericaulon* which differ more in habit and characters, than from the akin Genera *Podalyria*, *Thermopsis*, *Rafnia*, *Templetonia*, *Pitcheria* &c.

BAPTISIA Raf. calix urceolate unequally 4fid one tooth often emarginate, petals subequal papilionaceous, vexillum emarginate revolute wings callose or toothed inside, keel subequal obtuse, stamens 10 free unequal, style curved simple, stigma obtuse. Pod stipitate ovate or globose ventricose smooth polysperm.—*Perennial plants, leaves trifoliate sessile, not*

reticulate, stipules obsolete, flowers yellow racemose or solitary terminal, bracts obsolete.

322. *BAPTISIA TINCTORIA* of Authors. Raf. med. fl. tab. 14. Smooth, much ramose, terete folioles sessile obovate rhomboidal subobtus, racemes nodding pauciflore pod turgid ovate—common plant from Canada to Louisiana in woods, but it has several varieties or deviations, some of which are assuming the rank of sp. Var. 1. *procumbens*, 2. *thamnioides*, 3. *parvifolia* &c, estival,

323. *BAPTISIA RETUSA* Raf. smooth folioles obovate emarginate or retuse ample, branches uniflore—this appears entitled to be deemed a sp. the leaves are 4 times as large, the flowers twice as large, stem less ramose erect 4 feet high. Found in West Virginia and East Kentucky.

324. *BAPTISIA SPIEROCARPA* Nut. pl. rar. 52. smooth, branches angular canaliculate, folioles sessile obovate oblong obtuse retuse, racemes erect multiflore, pods subglobose—in Arkansas near streams, folioles uncial, flowers large deep yellow on short pedicels. In my specimens the raceme is not terminal as stated by Nuttall who first described this plant in 1834 Journ. Ac. N. Sc.

325. *BAPTISIA ALBIFLORA* Raf. Alba Authors. Smooth, branches terete, leaves on short petiols, folioles elliptic base acute end obtuse, raceme erect elongate multiflore, flowers white pods obovate—from Carolina to Alabama and Louisiana, vernal. Some Var. 1. *latifolia*, 2. *glauca*, 3. *mucronata*, 4. *retusa* &c, perhaps incipient sp. but all easily known by the fine white flowers. Perhaps a peculiar subgenus *Eleucia* Raf by pods petiolate leaves &c.

326. **RIPASIA** Raf. diff. *Baptisia* calix campanulate base acute, petals unequal on long claws, vexillum shorter reflexed, wings longer, keel equal to vexillum, stamens subequal, stigma acute, pod oblong terete acuminate. *Leaves with stipules, flowers blue racemose.*—This Genus or subgenus is known at first sight by the flowers, calix, longer wings and pod, stipules &c. The name implies its constant locality near streams.

327. **RIPASIA CERULEA** Raf. *Bapt. Podalyria* *Sophora australis* or *cerulea* of Authors. Smooth, branches terete, stipules lanceolate, leaves on short petiols, folioles sessile cuncate subacute, raceme erect elongate multiflore.—On the margin of rivers from the Potomak and Ohio to Louisiana and Florida, estival. Some Var. 1. *obtusifolia*, 2. *rhombifolia*, 3. *macrostachya* &c.

328. **LASINIA** Raf. diff. *Baptisia*, calix often hairy vexillum obcordate short, base auriculate, wings not callose, pistil quite hairy, style also at the base, pod subsessile, hairy oblong acuminate: *Perennial plants more or less hairy, leaves reticulate with stipules and flowers with bracts or else axillary, yellowish or greyish*—This group will be easily known by the hairy habit most intense in the pistil and pod, bracts, deeply cleft vexillum &c Michaux had 3 such hairy kinds, Elliot suspected there were more, and I shall increase them to 7 species.

329. **LASINIA RETICULATA** R. *Bapt. lanceolata* and *uniflora* of Authors. Stem smooth dichotome angular sulcate, stipules minute, leaves subsessile, folioles petiolate oblong obtuse base cuneate, minutely nervose reticulate on both

sides, flowers axillary and subracemose bracts lanceolate—in Carolina, Florida and Alabama, leaves 2 or 3 inches long, flowers vernal dark yellow.

330. *LASINIA FULVA* Raf. branches terete and pubescent, stipules obsolete, leaves and folioles sessile, smooth oblong elliptic base acute, end obtuse retuse, minutely nervose reticulate on both sides, flowers chiefly axillary, some racemose, bracts oblong hairy calix pubescent pistil and pod fulvous very hairy.—Tennessee and Arkansas. leaves uncial, flowers small of a dull fulvous yellow. A very distinct sp. probably blended among *B. villosa* which includes several sp. according to Elliott.

331. *LASINIA BICOLOR* Raf. (or *grandifolia*) stem dichotome pubescent, leaves petiolate, stipules linear, folioles sessile obovate or elliptical base acute, end obtuse or emarginate, margin ciliate, pubescent beneath, reticulate above, racemes short ovate pauciflore—in Arkansas and Texas, beautiful striking sp. leaves larger than in any other about 3 inches long, stipules petiols and calix pubescent, racemes with 8 or 10 flowers crowded large of a dull yellow with a large purplish spot at the base of the vexillum nearest to *B. mollis* of Mx. but very different from the next.

332. *LASINIA PALLENS* Raf. stem sulcate nearly smooth, pubescent above, stipules lanceolate, leaves sessile, folioles sessile oblong cuneate obtuse emarginate pubescent beneath, racemes oblong pauciflore, calix acute—Alabama and Apalachian mts. leaves biuncial, raceme triuncial of 10 or 12 large flowers of a dull yellow. Still nearer *L. mollis*, teeth of calix acute as in it, but very little hairy and not

at all soft. The above 4 sp. are quite distinct, and may be the *B. villosa* or *mollis* of some Authors, which I add here for contrast and comparison, although I have not seen them.

333. *LASINIA CINEREA* Raf. *B. villosa* of Authors, stem and leaves beneath pubescent, stipules linear, leaves subsessile, folioles elliptic obtuse—in Carolina, Michaux says the flowers are pale, Elliot calls them grey.

334. *LASINIA MOLLIS* R. Bapt. do Mx. &c. Quite pubescent soft decumbent, stipules lanceolate folioles, leaves petiolate, folioles rhomboidal lanceolate, calix acute—in North Carolina, flowers dark yellow, omitted by Elliot, discovered by Mx. found by Nuttall on the Catawba ridge, leaves 2 inches long one wide, pod small oblong acuminate.

335. *LASINIA BRACTEATA* Raf. Bapt. do Mg. Elliot, &c *leucophea* Nuttall &c—quite pubescent hispid, branches angular divaricate, leaves and folioles sessile, stipules large ovate acute, folioles cuneate obtuse, racemes multiflore secund, bracts large lanceolate—from Carolina to Louisiana and Missouri, fine striking sp. folioles 3 inches long narrow, young leaves yellow beneath, flowers large on long peduncles, called ochroleucous by Nuttall, grey by Elliot, they are become brown in my Specimen. Vernal.

Decandole appears to have misunderstood some of these sp. he divides the *bracteata* and *leucophea*, while he deems the first the *mollis* of Mx. but has another *mollis* of Nuttall

336. *PERICAULON* Raf. calix campanulate unequally 4fid, upper bidentate, petals equal papil. not spreading, vexillum carinate emarginate amplexens not reflexed, stamens 10

free equal, pistil stipitate, style curved, stigma acute, pod stipitate smooth subglobose acuminate swelled, seeds reniform. *Leaves simple amplexicaule reticulate, flowers axillary solitary peduncled yellow*—Genus quite distinct by habit, petals, stamens, pod &c which has been shuffled by turns into *Crotalaria*, *Sophora*, *Podalyria*, *Rafnia*, *Baptisia*! 5 Genera . . ! my name means *around stem*. Perennial and vernal.

337. *PERICAULON PERFOLIATUM* Raf. (5 Genera do of Authors!) stem terete, subramose, leaves perfoliate rounded elliptic both ends obtuse reticulate smooth glaucous—Carolina to Florida, sandy hills, aspect of *Bupleurum perfoliatum*, flowers pale yellow. My specimens are from Kin, in Collins herb. Dillen and L. describe it with *cordate ovate* leaves, do they mean another sp? *P. cordatum* Raf . . .

338. *PERICAULON MICROPHYLUM* Raf. *Baptisia* do Nut. rar. 53. stem ramose, leaves sessile obovate rounded, upper amplexicaule coalescent with rounded stipules—West Florida and Alabama, lately described by Nuttall, flowers and pod as in the last.

339. *EAPLOSIA* Raf. (to be simple) diff. *Pericaulon*, cal. camp. 4fid subequal, petals unequal on long claws, keel large much longer obtuse, wings oblong, vexillum obovate revolute, ovary conical desinent into a strait subulate style, stigma acute smooth. Pod substipitate conical smooth. *Leaves simple sessile smooth reticulate, stipules none, flowers racemose bracteate yellow*.—A fine distinct Genus by habit, petals, pod &c: Nuttall did not see the flowers, the leaves become fuscate in drying, lucid above, dull beneath.

340. *EAPLOSIA OVATA* Raf. *Baptisia simplicifolia* Croom and Torrey, and Nuttal? pl. rar. 51. stem flexuose striate, leaves broad ovate quite sessile, base rounded, end obtuse or retuse, raceme spiked, bracts ovate acute longer than the short pedicels—in West Florida, discovered by Croom, specimen sent me by Torrey, sesquipedal, subramose above, leaves large 3 inches long 2 wide, raceme subterminal 3 or 4 inches long, flowers forming a spike by short peduncles, calix canescent inside, teeth large ovate, petals dull yellow. Nuttal states his specimen to have had oval rhomboidal leaves, thus nearer the next and perhaps a variety, *rhomboidea*.

341. *EAPLOSIA LONGIFOLIA* Raf. stem flexuose sulcate, leaves oblong, elliptic subrhomboidal, base attenuate semiamplexicaule, end obtuse rounded—sent me from Alabama without flowers, but evidently akin to the last, leaves of same color and texture, minutely nervose reticulate above lucid blackish, beneath dull fuscate; but shape quite different larger 5 or 6 inches long, only 2 wide in the middle where swelled, both ends attenuated, and base a little decurrent.

342. *DREPILIA* Raf. calix campanulate subequal 5fid. petals pupilionaceous subequal, vexillum revolute, stamens 10 free, style filiform stigma minute smooth, pod substipitate falcate compressed acuminate moniliform polysperm. *Perennial, leaves petiolate trifoliate stipulate, flowers racemose subverticillate yellow*—this Genus has been improperly united to *Thermopsis* of R. Bruon which has calix bilabiate, pod linear strait &c, a siberian G. based on *Sophora fabacea*. *Drepilia* derives from *little scythe*. It is very akin to *Lasinia*.

343. *DREPILIA RHOMBIFOLIA* Raf. *Cytisus* do Pursh. *Thermia* Nut. *Thermopsis rhombif.* Hooker fl. bor. t. 47. *Th. oregonensis* Dec—leaves petiolate rhomboidal silky beneath, stipules rounded foliaceous, raceme subsessile interrupted—Missouri and Oregon, my specimens are from Bradburry, roots creeping, stems pedal angular.

This will conclude our Leguminose plants of *Sophora* tribe, the *Virgilia* is a tree and my N. G. *CLADRASTIS*, the *Soph. sericea* is subdiadelphous forming my N. G. *VEXIBIA*. I shall now give another interesting monograph of our *Crotalarias*.

244. *CROTALARIA*. Linneus had only 23 sp. we have now about 150! but many heterogeneous sp. are blended even by Decandole, see my flora telluriana for N. G. meantime most of our N. American sp. form a very natural group; our Authors have only 5 mostly deemed var. of *C. sagittalis* by Mx. some ascertained by Pursh and Elliott, but misnamed, since *sagittalis*, *levigata* and *parviflora* are exotic plants. I shall revise them and increase to 10 sp. having all simple leaves and long peduncles opposite to leaves, bracteate commonly multiflore, stem often winged, by decurrent stipules, like a reversed arrow, mostly annuals, flowers bibrac-teate yellow estival. They must form a subgenus *Iocaulon* (arrow stem) with the similar kinds of South America &c.

345. Subg. *IOCAULON* Raf. calix campanul. deeply 5fid subequal subbilabiate, equal to petals papil. Vexillum obcordate reflexed, keel acuminate longer than wings, stamens 10 monadelphous at base, split behind, filaments alternate longer bearing 5 round anthers com-

monly sterile, 5 shorter with oblong anthers bilocular. Pistil subsessile, style lateral longer than stamens, stigma obtuse hairy, pod subsessile oblong turgid obtuse mucronate on one side black and smooth polysperm, seeds small reniform shining rattling. *Habit as above stated.*

346. CROT. or Ioc. LINEARIS Raf. C. sagit. var. linearis Mx. smooth virgate erect, leaves linear elongate sessile acute stipules linear erect hardly decurrent; peduncles elongate triflore, bracts and calyx linear lanceolate ciliate, pods subterete—from Carolina to Louisiana, received from Alabama, annual, estival, stem erect slender pedal, leaves long narrow, 2 or 3 inches long, stipules well marked, peduncles very long 4 or 5 inches, with 1 or 2 bracts in the middle, flowers small near together. Pods longer and narrower than in the others, nearly terete oblong quite black.

347. CROT. or Ioc. LONGIPES Raf. sagittalis? Dec. smooth assurgent, stem well winged, leaves sessile narrow lanceolate acute, stipules lanceolate erect foliose decurrent, peduncles very long incurved biflore, bracts and calix linear lanceolate hispid—sent me from Alabama, large bipedal, leaves 3 or 4 inches long, half inch broad, stipules large uncial, peduncles 6 to 8 inches long, with a bract in the middle, flowers small, pods not seen.

348. CROT. or Ioc. PILOSA Raf. parviflora Roth Dec. P. El. &c. excl. syn. Mx. non parvifl. Thunberg. W. Sm—erect ramose, pilose hirsute, leaves subsessile oblong lanceol. ciliate mucronate. stipules short irregular subdecurrent, peduncles short subracemose 3-5flore, bracts and calix ciliate linear lanceol. pods turgid oblong—from Pensylv. and New Jersey to

Carolina and Missouri, small semipedal, leaves short uncial, peduncles biuncial flowers small, petals shorter than calix, pods brown. The *Cr. parviflora* Thunberg, miscalled *parvifolia* by Persoon is African and has ovate tomentose leaves. Annual estival, some Var. 1 *Simplex* leaves mostly oblong, in Pine Woods, 2 *flexuosa* lower leaves oblong obtuse, upper narrow lanceolate, Missouri. Formerly this was called *C. sagittalis*, and Beck, Torrey, Eaton... make 2 sp. of it, without any distinction!

349. CROT. or Ioc. CUNEIFOLIA Raf. Pursh Dec. levigata? Pursh. sagittalis Elliot. Smooth erect, leaves cuneate oblong mucronate glaucous beneath, upper leaves ciliolate, stipules lanceolate divaricate decurrent, peduncles short 2-3fl. pubescent, bracts and calix lanceolate—Carolina to Florida, sent me as *Cr. sagittalis*, probably blended with the next by Elliot, leaves biuncial quite cuneate at base, stipules broad, flowers small.

350. CROT. or Ioc. LUNULATA Raf. sagittalis var. oblonga Mx. stem assurgent pilose ramose, leaves subpetiolate nearly smooth elliptic or ovatoblong obtuse cuspidate glaucous beneath ciliolate, stipules lunulate lanceol. decurrent ciliate, peduncles short 1-2fl. bracts and calix lanceolate pilose, pod uncinat.—Carolina to Florida, my specimen from W. Florida, large plant sesquipedal, branches erect, leaves uncial, flowers small, peduncles biuncial, pods brown uncial oblong, with a hooked acumen. Stipules quite crescent shaped, very distinct sp. probably perennial like the next.

351. CROT. or Ioc. ovalis. P. El. &c stem pilose prostrate, branches angular erect not winged, leaves ovate or obovate or elliptic

smooth ciliate subpetiolate obtuse or retuse glaucous beneath, stipules minute not decurrent, peduncles elongate racemose 3-6 flore, bracts linear calix hirsute lanceolate, pod obovate—from Carolina to Florida and Alabama, stem sesquipedal, leaves uncial or less, peduncles 4 to 8 inches long, petals exceeding a little the calix, pods uncial. Perennial, some Var. 1 *Obovata* many leaves obovate, 2 *parvifolia* &c.

352. CROT. or Ioc. PUMILA Raf. Dwarf prostrate branches flexuose hispid diffuse angular, leaves elliptic rounded subsessile obtuse or retuse rugose, stipules obsolete, peduncles very short uniflore, bracts linear, calix lanceolate hirsute—Florida and Georgia, perennial, only 2 or 3 inches high or long, leaves and flowers very small. Habit of *Polygonum aviculare*. Probably a deviation of the last.

353. CROT. or Ioc. SAGITTALIS L. &c stem erect hirsute winged above, leaves lanceolate petiolate hairy beneath, stipules bifid decurrent peduncles racemose—in Guyana and Brazil, quite different from all ours. Decandole appears to omit it, and applies the name to ours, perhaps to 347.

354. CROT. (Ioc?) FLEXUOSA (Eaton.) Suffruticose, branches flexuose, leaves obovate dentate hairy, flowers corymbose downy—Carolina, quite distinct since shrubby with toothed leaves: not seen, I find it only in Eaton, who forgets to quote the Author.

355. CROT. (Ioc?) SCARIOSA Raf. suffruticose branches erect simple slender terete silky, leaves adpressed sessile lanceolate acute entire, silky white beneath, peduncles subradical with scariose scales, flowers subcapitate, involucre

scariose, bracts and calix broadly lanceol. silky—Texas and Arkansas, submulticaule 5 or 6 inches high, only woody at the base, no stipules, floriferous stems or peduncles 3 or 4 inches long, scales fulvous vaginate, flowers 5 or 6, yellow, vexillum large round longer than calix.

356. CROT. (Ioc?) ASARIFOLIA Raf. Prostrate puberulent, stem simple slender angular not winged, leaves on long petiols broadly cordate obtuse entire, stipules obsolete, peduncles axillary short 1-2 flore, bracts and calix lanceolate—Texas, collected by Drummond, a very distinct sp. by petiolate leaves, probably not a Iocaulon, yet flowers similar small, petals equal to calix, annual? leaves remote petiols uncial, leaves one inch broad but shorter, pods not seen.

357. CROT. (Ioc?) ALATIPES Raf. smooth, stem angular flexuose, leaves on winged cuneate petiols, oblong acute base subcordate, reticulate above, stipules lanceol. scariose striate, flowers racemose terminal, bracts similar to stipules equal to pedicels—South Florida, herb. of Collins, not named, evidently of this group, but not a Iocaulon! probably a peculiar subgenus (*Alatipes* Raf.) calix short with a subulate calicule beneath, petals subequal, keel quite curved acute, vexillum reflexed, pod not seen. It must be compared with the tropical sp. Quite smooth all over, perennial, leaves rigid 2 or 3 inches long, petiols uncial, some lower leaves smaller oboval retuse, spikes slender curved 3 uncial, flowers small saffron yellow.

Decandole has another from N. Amer. *Crot. platycarpa* of Link. which hardly differs from *Cr. pilosa*, and is probably var. *simplex*, by its

oblong leaves; the name of platycarpa is an absurdity in a Genus having always turgid pods: if really with flat pods it is not of this Genus!

358. GERARDIA AND AKIN GENERA—Sir James Smith has stated in Rees Cycl. that this Genus of Plumier was based on the *G. tuberosa* only, and that Linneus in adopting it had united thereto many plants that ought to be separated if with different characters: this is the fact with all our North American sp. which must even form 3 or 4 peculiar Genera. Nuttall deemed them confused, forming 2 sections with purple and yellow flowers as near *Digitalis* as *Gerardia*! I have reformed this *G.* in flora Tellur. I now mean to revise all our species, which I mostly possess and amount to over 20. Some of these were once united to *Rhinanthus*, *Chelone* and *Erinus*! but *Seymeria*, *Pagesia*, *Dasistema*, and others, have been already distinguished. I shall add many others.

Character of real GERARDIA. Calix 5fid, corolla tubulose bilabiate, upper lip emarg. erect, lower 3lobe, reflexed, middle lobe bifid, lateral lobes emarginate. Stamens 4 didynamous smooth, anthers smooth, a style, stigma obtuse. Capsule bilocular oligosperm, partitions contrary to valves, dehiscent below. *Roots tuberose, leaves opposite entire, flowers axillary yellow.* Several tropical sp. blended in *G. tuberosa*.

359. LOPHANTHERA Raf. differs by corolla campan. 5lobed, the anthers crested, *leaves divided* &c. Type *G. delphinifolia* of Asia &c. The African sp. form the *G. MELASMA* of Berg.

360. AUREOLARIA Raf. calix campanul.

semi 5fid subequal segments simple, corolla campanul. ventricose, limb 5lobed obliquial, lobes subequal entire. Stamens 4 didyn, filaments hairy as base, anthers hairy not crested, base bifid biaristate. Capsule dehiscent above. *Roots perennial, leaves opposite, flowers terminal bracteate yellow*—This will include nearly all our golden sp. except *G. pedicularis* &c. The name implies the golden flowers.

361. *AUREOLARIA VILLOSA* Raf. Ger. do Muhl. Ger. *flava* L. &c. Easily known by its pubescence often all over, leaves oblong, the lower sinuate. Several var. 1. *virgata*, 2 *sinuata*, 3 *montana* all leaves entire, 4 *heterophylla* Mg. leaves very different and sinuate.

362. *AUREOLARIA LEVIGATA* Raf. *Gerardia* do Raf. *annals Nat.* 99, *G. lanceolata* Muhl. Cat? Quite smooth, leaves subsessile lanceolate acute entire, pale beneath, bracts ovate lanceolate, flowers subsessile, teeth of calix ovate obtuse—in the Mts. Alleghanies and Cumberland from Pennsylv. to Kentucky, desc. by me 1818 descr. 1820 in my *annals*, stem 1 or 2 feet high mostly simple faintly 4gone purplish, bracts small, flowers large yellow estival. Var. 1. *ramosa*, 2 *alternifolia* some leaves and most of the flowers alternate.

363. *AUREOLARIA RETICULATA* Raf. stem asurgent terete smooth simple, leaves sessile oblong and cuneate entire acute, rough above and on margins, beneath smooth reticulate, flowers racemose peduncled, bracts linear cuneate, teeth of calix ovate acute—Florida and Alabama, pedal, stem dark purple, leaves biuncial.

364. *AUEREOLARIA CUNEIFOLIA* Raf. smooth, stem simple terete, leaves sessile cuneate acute

sinuate dentate, flowers racemose, bracts linear entire, peduncles equal to calix. segments lanceolate—Mts. Alleghany rare, stem pedal dark purple, leaves 2 to 4 inches, upper narrow, calix broadly camp. subbilabiate, corollas large. Very different from *Gerardia cuneifolia* of Pursh, nearer to *A. glauca*.

365. *AUREOLARIA RUPESTRIS* Raf. Ger. do. R. Atl. Journ. p. 154. quite smooth, stem fistulose purplish, leaves petiolate bipinnatifid segments deep lanceolate acute remote, sinusses rounded, upper leaves oblong pectinate laciniolate. racemes often ramose, bracts lanceol. entire, flowers secund peduncled, segments of calix lanceol. acute—in the Alleghany Mts. on rocks, Tuscorora chain &c, probably blended with the next by Authors, 2 or 3 feet high, often ramose, leaves large below and twice cut, narrower above, flowers smaller than in the other kinds.

366. *AUREOLARIA GLAUCA* Raf. Ger. do. Eddy, Eaton, Tor. Beck. *G. quercifolia* Pursh, Elliot. *G. flava* Walter, *Rhinanthus Virginicus* L.—Quite distinct from the last by larger size, stem solid glaucous, leaves sessile the lower sinuate pinnatifid, attenuate at both ends, a little rough, upper entire, raceme paniculate, bracts linear, segments of calix linear elongate—from Long Island to Carolina and West in the prairies of Kentucky, where it attains 6 feet var. 1. *Gigantea*, 2 *purpurea* stem purplish.

367. *PANCTENIS* Raf. (quite combed) diff. *Aureolaria*, calix urceolate 5fid segments unequal foliaceous pectinate or crenate. Corolla hairy outside, stamens quite hairy, capsule polysperm. *Flowers axillary*, this may

be deemed a subgenus of the last if liked, but is very distinct and may as well be a Genus.

368. *PANCTENIS PEDICULARIS* Raf. (or *Aureolaria*) Gerardia do L. &c. Well known common species very branched and clammy villose, segments of calix crenate serrate or laciniate. Var. 1 *ramosissima*, 2 *pumila*, 3 *simplex* &c, but 2 other varieties appears to be wide deviations and incipient sp. sprung from this.

369. *PANCTENIS PECTINATA* Raf. Ger. pedic. var *pectinata* Nut. leaves ovate pectinately sub-bipinnatifid softly villose, peduncles short, segments of calix pectinate—found by Nuttall in pine woods of Carolina, by myself in pine woods of Alleghanies, sesquipedal.

370. *PANCTENIS PUMILA* Raf. dwarf, leaves lanceolate, crenate or pectinate hardly pinnatifid, petiols elongate, segments of calix only crenate—Alleghany Mts. found in bloom later than any other in Autumn, roots large thick branched, stem only 3 inches high, leaves small not bipinnate, flowers as large as usual, whole plant quite hairy but not clammy. Could it be a late Autumnal shoot thus deviating to form a peculiar species?

371. *AGALINIS* Raf. (remarkable flax.) Calix campanul. 5 dentate, often truncate, teeth subequal not obliquial. Corolla widely campanulate 5 lobes rounded equal obliquial often ciliate. Stamens didyn. villose, anthers bicuspidate at base, dehiscent laterally. A style, stigma obtuse compressed. Capsule globose bilocular, bivalve quite split, polysperm. *Chiefly annuals, slender stems and leaves, flowers axillary and terminal purplish*—a very distinct natural Genus having the habit of flax,

with toothed calix and purple flowers estival and Autumnal, leaves and flowers chiefly opposite, leaves always sessile.

372. *AGALINIS PALUSTRIS* Raf. Ger. *purpurea* L. &c. that name applied to all. It will be known by its locality near marshes, stem branched rough 4gone, leaves broad linear rough, flowers subsessile and large, teeth of calix elongate and broad. From New England to Carolina, sesquipedal. Var. *Corymbosa* branches crowded corymbose, 2. *divaricata* slender divergent, 3 *ramosissima*, 4 *virgata* &c, but the next appears to be distinct.

373. *AGALINIS LONGIFOLIA* Raf. stem simple 4gone smooth, leaves long linear smooth thin margin rough, flowers subsessile, teeth of calix long subulate,—Near streams New Jersey to Virginia, stem 6 to 12 inches only, while leaves 2 or 3 inches long, often alternate above, flowers rather large.

374. *AGALINIS MARITIMA* Raf. Ger. do Raf. med. rep. 1808. Nuttall 1818. *G. purpurea* var. *crassifolia* Pursh. Quite smooth, stem branched, leaves linear thick convex beneath enerve, flowers on peduncles shorter than leaves, calix crenate, teeth short obtuse—on the Sea shores from New England to Chesapeake bay. Stem 2 to 8 inches high, flowers smaller. A very distinct sp. one of the few of my early discoveries in 1802, adopted by our botanists. Var. 1. *pumila*, 2 or 3 inches high, 2 *gracilis* less branched slender leaves remote.

375. *AGALINIS VIRGATA* Raf. quite smooth, stem simple virgate angular, leaves adpressed narrow linear, flowers racemose opposite on short peduncles, teeth of calix short acute—glades of Pine woods in South New Jersey near

Mullica Hill &c, annual, estival, 6 to 15 inches high, leaves short semiuncial equal to internodes, shorter or remote above, flowers size of *A. maritima*, peduncles equal to calix. This is most likely the *erecta* of Walter.

376. *AGALINIS CORYMBOSA* Raf. stem smooth angular filiform branches terminal corymbose virgate, leaves adpressed setaceous linear scabrous with a thick nerve, flowers alternate subsessile, teeth of calix broad acute—Carolina and Florida, stem 1 or 2 feet very slender, leaves small semiuncial, flowers rather large. It appear to differ from the *G. plukeneti* of Elliot by the leaves, rough and broader, less branches, shorter peduncles and alternate flowers.

377. *AGALINIS PLUKENETI* Raf. Ger. do Elliot. Pluk. phyt. t. 12. f. 4. not seen by me, appears to differ from last by stem much branched, setaceous smooth leaves, peduncles longer. Carolina.

378. *AGALINIS PERENNIS* Raf. Ger. *linifolia* Nut. El. &c Perennial creeping roots, stem terete virgate smooth, few virgate branches, leaves smooth long linear thick, flowers terminal racemose smooth, peduncles subequal to the upper leaves, teeth of calix remote short acute—Carolina to Florida, a very distinct sp. from my *A. virgata*, nearer *A. maritima*; distinct from all by the roots that are annual in others. My specimen is from Florida, and has leaves nearly 2 inches long, rather divergent, flowers few remote, corolla smooth not pubescent and ciliate as in most species, peduncles nearly uncial.

379. *AGALINIS FASCICULATA* Raf. Ger. do Elliot. I have not seen this sp. but it appears

to differ from all mine by the tall rough rigid stem 3 to 5 feet high, leaves opposite and ternate with axillary fascicles, rough linear, flowers subsessile and teeth of calix linear longer than in any—Sea Islands of Carolina.

380. *AGALINIS TENUIFOLIA* Vahl. and all bot. but Elliot suspects some sp. are blended since Nuttall calls the leaves rough, but his own specimens in Collins herb. are smooth. Easily known by complete smoothness stem 4gonal, leaves linear, corolla short small smooth, peduncles as long as leaves, teeth of calix small acute—from Canada to Florida and Missouri, autumnal, woods and glades var. 1 *paniculata* 2 *ramosissima* 2 feet high Elliot. 3 *humilis* semipedal few branches, 4 *saxatilis* leaves longer, branches divaricate.

381. *AGALINIS SETACEA* Raf. Ger. do Pursh. smooth, stem subramose terete filiform, leaves setaceous, peduncles filiform longer than leaves corolla short, teeth of calix minute acute—New Jersey to Alabama and Kentucky, Illinois in glades, flowers as in the last. Var. *humilis* 6 to 10 inches, 2. *major* 1 or 2 feet more branched.

382. *AGALINIS OBTUSIFOLIA* Raf. quite smooth and glaucous, stem subramose angular filiform, leaves setaceous sulcate, end obtuse callose, flowers racemose, peduncles much longer than leaves, corolla short, teeth of calix minute remote callose—West Tennessee, Alabama and Florida, distinct from last by angular stem and leaves with a deep furrow, obtuse at the end, all other kinds have acute leaves. Stem with few slender branches, leaves and flowers often alternate ; corolla smooth shallow or broadly campanulate.

383. *AGALINIS FILIFOLIA* Raf. Ger. do Nut. Ell. I have not seen this sp. of Florida, it appears to differ by terete stem, leaves filiform, carnose, corolla large similar to *A. palustris*, calix likewise.

384. *AGALINIS MICROPHYLLA* Raf. smooth, stem virgate terete costate sulcate, leaves remote adpressed scattered minute linear obtuse, flowers spicate subsessile, peduncles shorter than calix, teeth short acute, corolla smooth ciliate shallow—in Florida, collected by Lecomte (Collins herb) very slender, few alternate branches, few leaves 2 or 3 lines long, stem deeply grooved and ribbed not angular. Flowers small similar to those of *A. glauca*. Quite distinct from next by stem, leaves and peduncles.

385. *AGALINIS APHYLLA* Raf. Ger. do Nut. El. smooth, stem virgate nearly simple 4gonal leaves opposite like scales ovate acute deciduous, flowers racemose opposed, peduncles elongate triple of calix, teeth minute acute—Carolina to Florida. My specimen is only pedal, and in fruit, quite aphyllous, capsules ovate, there are 2 other doubtful sp. of this Genus, *Ger. leucanthera* fl. lud. 155, which is probably a var. of *Ag. tenuifolia* G. 2. *Ger. flammea* of Bartram travels omitted by all later botanists, is perhaps a *Russelia*! for *G. auriculata* see next Genus.

386. *TOMANTHERA* Raf. calix 5parted unequal, corolla smooth venose, rotate campanulate 5lobed, lobes rounded 2 superior larger, stamens 4 didynamic very unequal, 2 of double length, filaments smooth flexuose, anthers smooth bipartite, the 2 cells unequal, dehiscent laterally, style flexuose, stigma obtuse. Capsule ovate

acute bivalve as in *Agalinis*. *Same habit annuals, leaves opposite sessile, flowers axillary purplish*—A very distinct G. by calix, stamens and anthers, corolla as in *Seymeria*, but purple. The name applies to the split anthers.

387. *TOMANTHERA LANCEOLATA* Raf. *Erinus!* *africanus* Muhl. stem simple hirsute, leaves lanceolate acute entire pubescent, flowers subsessile, segments of calix ovate lanceolate pubescent—A very rare plant deemed doubtful because never described. In Pensylv. and Carolina, my specimen of Collins herb. was collected by Dr. Cleaver in New Jersey, it is annual only 4 inches high, with a thick stem of a dark purple, leaves few small 4 to 8 lines long, flowers large, size of *Agalinis tenuifolia*, calix subfoliose, corolla smooth. Never met by me in 25 years of researches!

388. *TOMANTHERA? AURICULATA* Raf. *Gerardia* do. *Mx.* and all our copists, who have never seen it nor described it! by Michaux short account it differs by stem nearly simple very rough, leaves ovate lanceolate auriculate, flowers quite sessile—in Illinois and also Louisiana: I have not seen it and it must be better described.

389. *DASISTEMA* Raf. *J. Sc. phys.* 1819. Calix urceolate 5fid, segments unequal foliaceous dentate. Corolla with a short thick tube wooly inside, limb rotate 5lobed, lobes subequal concave wooly at the bottom. Stamens 4 didyn short wooly, anthers mutic smooth. a 5th sterile stamen, style short, stigma clavate. Capsule as in *Aureolaria*, seeds winged. *Perennials, leaves divided opposite, flowers spicate bracteate yellow.*—This N. G. of mine disc. 1818 published 1819 with my 50 N. G. is quite pe-

cular having the calix of *Panctenis*, but stamens unlike all.

360. *DASISTEMA AURICULATA* Raf. quite villose, stem 4gone ramose, leaves petiolate broadly lanceolate, the lower auriculate at base, medial truncate at base, upper acute at base, all crenate serrate subobtusely, bracts sessile obovate, flowers subsessile, calix crenate—on the banks of R. Ohio in West Kentucky and Illinois, estival, fine plant 3 or 4 feet high, leaves 2 to 4 inches long, flowers large golden yellow.

391. *DASISTEMA MACROPHYLLA* Raf. *Seymeria* do Nuttall &c *Erinus pinnatifidus*? Mg. stem ramose, leaves nearly smooth subsessile, lower elongate pinnatifid or sinuate, upper lanceolate entire, flowers subsessile, segments of calix entire ovate—found by Nuttall in Ohio, I have his specimen in Collins herb. whereby I have ascertained what I already surmised, that it is really a sp. of this Genus and not *Seymeria*, Nuttall says the stamens are smooth, but involved in the wool of the base, he meant the anthers, the filaments being also woolly. Tall plant, leaves 3 to 6 inches long, flowers yellow.

392. *SEYMERIA* Pursh. *AFZELIA* Gm. not Smith. Calix camp. deeply 5fid. subequal. corolla rotate campanulate deeply 5lobed, lobes subequal, stamens 4 very short subequal quite smooth, except at insertion subsessile deflexed, anthers oblong smooth emarginate, incumbent, two equal cells opening by ovate terminal pores. Style filiform declined, stigma obtuse. Capsule bivalve ovate 2loc. polysperm, seeds minute. *Annuals, leaves opp. and alt. small divided, flowers axillary yellow*—a very distinct Genus mistaken by Nuttall who gave the character out

of his *S. macrophylla*, the stamens and pores are quite different. Elliot has better understood the characters and the 3 sp. which I all possess.

393. *SEYMERIA TENUIFOLIA* Pursh. N. E. &c. *Afzelia cassioides* Gm. *Gerardia afzelia* Mx. branches terete rough, leaves smooth setaceous lower pectinate pinnatifid, upper subentire, flowers racemose, peduncles subequal to leaves, segments of calix linear—Carolina to Alabama, stem 3 or 4 feet (Elliot) much branched, small slender leaves, calix quite cupular at base with rounded sinusses and linear segments, corolla with purple dots inside, segments oblong obtuse, capsule smooth.

394. *SEYMERIA PECTINATA* Pursh &c. Viscose pubescent leaves pectinate pinnatifid, segments of calix cuneate—Carolina to Florida, although Nuttall calls this common, Elliot did not see it, and I have fewer specimens than of the last. Branched, leaves short, calix with deeper and broader segments, sinusses obtuse, corolla and capsule pubescent.

395. *SEYMERIA HETEROPHYLLA* Raf. *S. jacksoni* E. viscose pubescent, branches virgate, leaves oblong lanceolate, lower pinnatifid segments oblong the last larger, upper leaves entire or auriculate, peduncles equal thereto, segments of calix oblong deeply parted—a very distinct sp. which Elliot deemed doubtful. Alabama and Georgia, my specimen from Leconte C. H. 2 to 4 feet high, branches incurved subterete, leaves minute very short, calix almost 5parted, corolla small segments ovate obtuse, style short.

396. *DASANTHERA* Raf. 1817. Calix 5 parted unequal, corolla campanul. 5lobed une-

qual, stamens 4 unequal, anthers villose. *Leaves opposite serrate, flowers purple*—to complete the compared account of all the *Gerardias* I add this Genus, with some others not seen by me, and very little known, which must be described better hereafter. This appears medial between *Aureolaria* and *Dasistema*, but the calix and purple corollas differ from both.

397. *DASANTHERA FRUTICOSA* R. *Gerardia* do Pursh &c shrubby, leaves lanceol. serrate subpetiolate, flowers racemose bracteate.—Oregon Mts. only seen dry by Pursh and Torrey.

398. *DASANTHERA?* *CUNEIFOLIA* Raf. *Ger.* do Pursh &c perennial, branches erect, leaves cuneate unequally serrate, upper alternate, peduncles axillary longer than leaves or bracts—Florida, disc. by Bartram but not his *flammea*, of doubtful Genus not even seen by Elliot. Calix 5parted and purple flowers.

399. *PAGESIA* Raf. fl. lud. calix 5parted unequal, upper segment larger, corolla tube ventricose limb rotate bilabiate, upper lip reflexed flat emarginate, lower trilobe. Stam 4 didyn. style and stigma simple, capsule as in *Aureolaria*. *Leaves oppos. sessile, flowers racemose white*—This G. of mine 1817 is akin to all the above, but distinct by the calix bilabiate, white corolla &c.

400. *PAGESIA LEUCANTHA* Raf. fl. lud. 149. Stem weak decumbent 4gone ramose, leaves sessile ovatoblong serrulate smooth, axils biauriculate, flowers racemose on long peduncles, segments of calix striate—in West Louisiana and Texas probably, disc. by Robin, many weak stems pedal, white smooth flowers, capsule oval polysperm. This may be the white flowered *Ger. auriculata* of Louisiana hinted at by some botanists.

401. OVOSTIMA Raf. Cal. campanul. 5 fid, segments unequal leafy entire. Corolla tubular ventricose smooth limb large spreading with 5 lobes subequal rounded. Stamens 4 didyn. included, filaments subequal smooth; anthers obtuse base sagittate bifid bicuspidate 2locul. opening laterally, sutures pubescent. Style elongate strait, stigma capitate ovatoblong acute nodding. Capsule small inclosed. *Perennial? leaves opposite petiolate, flowers axillary white*—a singular Genus partaking of the characters of many akin, but distinct by calix, stigma and white flowers as in Pagesia. The name means ovate stigma.

402. OVOSTIMA PETIOLATA Raf. quite smooth stem simple terete purplish, leaves opp. petiolate oblong lanceolate both ends acute, lower repand or with remote unequal obtuse teeth, upper subentire, flowers subsessile, segments of calix ovatoblong—Florida or Alabama, received without name with many other rare plants. I first called it *Aureolaria pallida*, but have been able to ascertain it since as a N. G. near Pagesia; I have not the ripe fruit however. Stem sesquipedal, leaves thin pale beneath 2 or 3 inches long, flowers large nearly 2 inches long, segments of calix longer than camp. base, corolla thin apparently white or very pale ochroleucous.

403. RUSSELIA Jaq. Jus. W. not of Lin. junior which is Vahlia. Calix 5parted, corolla tubulose limb spreading bilabiate, upper lip emarginate, lower longer trilobe stamens 4 didyn. inclosed. Capsule acum. subuniloc? valves inflexed. *Leaves oppos. peduncles axillary flowers red or scarlet*—this fine tropical Genus must be added to our Flora. Gal-

vezia of Dombey in Jussieu united thereto by W. P. differs by calix 5fid, tube ventricose below and capsule globose.

404. *RUSSELIA JUNCEA*. Zuc. in bot. reg. 1773. Branches 4gone erect virgate, leaves minute petiolate ovate subentire, peduncles filiform subbiflore—Texas and Mexico, flowers scarlet.

405. *RUSSELIA FLAMMEA* Raf. *Gerardia* do Bartr. trav p. 412. stem ramose pyramidal, leaves lanceolate ? flowers in a pyramidal foliose panicle—Alabama, indicated 60 years ago by Bartram, and still not in any work nor garden as yet: although a splendid plant 4 feet high, crowded with large scarlet flowers, tubular and bilabiate; therefore referable to this Genus, unless it is a new one to be called *FLAMMARIA COCCINEA* Raf.

406. *MACRANTHERA* Torrey 1835. *Conradia* Nuttall 1834 but not of Martius. Calix deeply 5fid, corolla tubular border 5fid subequal. Stamens-4 subequal exerted, filaments hairy, anthers linear sagittate. Style long filiform, stigma simple or bifid. Capsule ovate acum. polysperm, as in *Aureolaria*. *Perennials, leaves opposite divided, flowers axillary racemose yellow on long reflexed incurved peduncles.*—I adopt the name of Torrey instead of *Conradia* already twice employed, by myself in 1825 for my *Leptilix* Neog. 25 for the American *Tosfieldas*, see Abama 1st part, and also by Martius, *Macranthera* is not however a very good name as the anthers are not very long, the name of *Toxopus* (Raf.) meaning incurved peduncles would have been better, but the 2 sp. known (and there may be more) ap-

pear types of two subgenera differing as *Panctenis* and *Aureolaria*.

407. *MACRANTHERA* *LECONTI* Torrey (or *Toxopus gymnanthes* Raf.) leaves smooth petiolate ovate lanceol. sinuate pinnatifid, bracts and segments of calix linear lanceolate entire in Florida and on the R. Alatomaka, 2 or 3 feet high, flowers autumnal deep yellow. Torrey states the stigma to be simple and yet his figure shows it quite bifid and bilamellar.

408. *MACRANTHERA* *FUSCHIOIDES* T. Benth (or *Toxopus calycinus* or *Tomilix bracteata* Raf) *Conradia* Nut. rar. 41. fig. Smooth leaves petiolate lanceolate sublyrate pinnatifid, bracts ovate sinuate, segments of calix lanceolate unequal foliose serrate—in Alabama, fine large plant with golden flowers, the calix is nearly as in *Panctenis*, and the stigma certainly simple, these two characters indicate a subgenus if not a Genus! my *Tomilix* meaning cut calyx.

409. *APENTOSTERA* Raf. (no fifth sterile) Calix 5parted subequal, corolla ventricose campanul. bilabiate, upper lip erect bilobe, lower trilobe. Stamens 4 didyn. anthers villose, no fifth sterile filament. Capsule ovate acute, seeds angular not winged. *Leaves opposite, flowers axillary, racemose purplish*—this N. G. of Origen is probably fecund in sp. It links the *Gerardia* group with the *Pentostemon*. Totally unlike our real *Chlonanthus* (chelone) having the corolla convex short and winged seeds. *Pentostemon* which now includes a crowd of sp. that must be divided into 5 Genera, differ by the fifth filament and various corollas. Also near to *Pagesia*.

410. *APENTOSTERA* *SECUNDIFLORA* Raf. Pen-

tost. scouleri Lind. bot. reg. 1277. Suffruticose, leaves cuneate serrate, upper linear obtuse entire, flowers subracemose secund—Oregon, large purple flowers. Akin to *Dasanthera fruticosa* 397.

411. *APENTOSTERA TRIFLORA* Raf. *Chelone* nemorosa Lind. bot. reg. 1211. Herbaceous, leaves ovate acum. serrate, upper amplex. cordate, peduncles axillary triflore—Oregon, quite similar to the last in the structure of flowers, yet put into a different Genus by Lindley!

412. *LEPTEIRIS* Raf. (minute sterile) calix 5parted, corolla tubulose incurved bearded inside, limb 5lobed subequal. A minute rudiment of a fifth sterile stamen. *Leaves oppos. narrow, flowers glomerate verticillate whitish*—another and nearer link to *Pentostemon*, distinct from it by corolla and habit quite peculiar: akin to *Russelia* and *Pagesia*.

413. *LEPTEIRIS PARVIFLORA* Raf. *Pentostemon micranthum* Nut. cat. 83. Smooth, leaves linear lanceol. acute entire subamplex. flowers spicate paniculate glomerate in whorls, segments of calix lanceolate—Oregon, stem slender pedal, seen dry, collected by Wyeth.

I must end here this long survey of the Genera akin to *Gerardia*, without attempting yet all those akin to *Pentostemon*. They are further removed from *Digitalis* to which Nuttall compared them. Thus we have already 12 Genera and 40 sp. of plants akin to *Gerardia* or once added thereto, many of which are quite rare plants seldom seen by our botanists; some are beautiful and yet hardly known in Gardens. There must be others in the Missouri and Oregon regions. It is a fact that in this tribe the colors of flowers indicate Genera! I have not

yet seen the labor of Hooker on the *Gerardia*.

414. *SCHWALBEA AMERICANA* L. &c. I have several specimens of this fine and rare plant, collected from New Jersey to Carolina; yet I never could meet it myself in 25 years of botanical herborizations! I mention this to show again how easy it is for careless botanists to overlook my new and rare plants or blend them with others, if such plants escape my keen researches. Well described by Elliot. The alternate leaves and capsule with partition formed by the valves, remove this G. from the group of *Gerardias*.

MONOCOTYLES.

Although I wish to be concise I have been compelled to dwell upon some Genera improperly known, and thus give again monographs instead of mere insulated new species; this plan will be preferred by those who like to compare the whole at once. Having till now described *Dicotyles* only, I now mean to give some new or rare *Monocotyles* in the remainder of this second part of my *Fora*; the third part whereof will be chiefly upon trees and shrubs.

415. *UNISEMA* Raf. 1808. *Med. fl.* 1830. *Fl. tell.* 6. Beautiful distinct Genus of mine based on the various species blended in *Pontederia cordata*! with a fruit quite peculiar similar to Grasses! which our botanists have hesitated to adopt, altho' *they knew it was good, having verified the fruit*!—Perigone corolli-form bilabiate 6fid, stamens 6 unequal filiform

incurved. Style filiform, stigma simple. Fruit a single oblong seed covered by the marcescent 6 ribbed perigone, perisperm farinaceous, embryo fleshy central terete. *Aquatic plants, roots fleshy creeping, leaves radical petiolate, stem unifoliate articulate, spadix terminal spicate with a vaginal spatha below the base, flowers blue.*—Thus quite a natural Genus, widely different from Pontederia and the akin Genera Kadakia, Carigola, Gomphima, Piropus, Lunania or Endolimna see my flora tell. This forms the type of a peculiar family UNISEMIDES 1815 near to Aroides and Typhacea, the spike is a real spadix. I have given a long history of this G. in my Medical flora.

416. UNISEMA DELTIFOLIA Raf. m. fl. fig. 93. Radical leaves oblong deltoid obtuse, base acute or truncate, stem leaf subsessile similar undulate base subreniform; spike terete, peduncle subequal to spatha, segments of flowers oval obtuse—in West Kentucky, Tennessee, Alabama and Florida. Stem 3 feet, leaves 5 to 8 inches long, spike 3 inches.

417. UNISEMA PEDUNCULARIS Raf. purshiana? Raf. m. fl. (angustifolia? Pursh) This differs from last by leaves truncate or subcordate the stem leaf on a long petiol, the peduncle of the spike twice or thrice as long as the spatha, segments of flower linear lanceolate—Carolina to Florida. Spike shorter hardly 2 inches. Var. *parvifolia*, leaves 3 or 4 inches long only, spike only one inch, peduncle and petiols not quite so long. My specimens of both have all obtuse leaves, none are acute.

418. UNISEMA MEDIA Raf. m. fl. 3. Leaves oblong cordate obtuse consimilar, spike terete peduncle longer than spatha, segments oblong

obtuse—New York to Carolina, called *P. angustif.* by many, not at all deltoid, lobes deep rounded, breadth of leaves about one third of length. spikes 2 or 3 inches long. Var. *angustifolia* leaves still narrower, Var. *albiflora* with white flowers.

419. *UNISEMA ACUTIFOLIA* Raf. 6 *P. cordata* Lamark. Leaves cordate acute, spike terete, segments oval oblong—Carolina found by Bosc, I have not seen it yet, is it a Var. of *U. latifolia*?

420. *UNISEMA HETEROPHYLLA* Raf. 8. Leaves oblong lanceolate obtuse, base subcordate or truncate, stem leaf cordate on long petiol, spike oblong, peduncle equal to spatha, segments linear oblong—New York to Louisiana, found at Trenton falls of Delaware and on the R. Ohio, a small plant, 12 to 18 inches high, leaves 1 to 3 inches long very narrow, therefore the *P. angustif.* of some botanists. Var. *lanceolata*, 2 *stenocardia*.

421. *UNIS. LANCIFOLIA* Raf. fl. tex. 27. Pont. lanceolata Mg. Elliot. Leaves linear lanceol. base rounded or acute, end acute—Florida to Texas. Leaves 3 or 4 inches long broader than in last, sometimes ovatooblong, but really acute.

422. *UNIS. OBLIQUATA* Raf. m. fl. 4. Leaves more or less obliquial with unequal sides, obtuse oblong cordate or subhastate, spikes ovatooblong peduncles equal to spatha, segments linear obtuse—from New Jersey to Virginia, about 2 feet high, leaves 4 to 6 inches long, spikes one inch.

423. *UNIS. LATIFOLIA* Raf. 5. Pont. cordata of most botanists. Leaves ovate broadly and deeply cordate very obtuse, spike oblong terete

peduncle equal to spatha, segments oval—the most common kind from New Jersey to Florida, in marshes and streams, 3 to 5 feet high, leaves nearly as broad as long. Var. 1. *Elatior*, 2 *undulata*, 3 *pallida*, 4 *albiflora* &c.

424. *UNIS. MUCRONATA* Raf. 1808 m. fl. 7. Leaves narrow oblong, base broader cordate; end with a long obtuse point, spike terete, segments oblong—found by Mr. Hingston in Virginia 1800, seen in his herbal.

425. *UNIS. ROTUNDIFOLIA* Raf. m. fl. 9. Leaves rounded obtuse hardly cordate at base, spike oblong, segments oval—Kentucky and Illinois. Stem weak, one foot high, leaves small about 2 inches. Not the Ponted, rotundif. of Linneus and South America, which appears the real type of *Pontederia* having a trilocular capsule.—Thus I have increased this fine Genus to 10 sp. and they may be more: to deem them mere varieties would be preposterous; but they may be specific deviations of a single original type. These plants were called *Wampi* by the Indians and the seeds eaten by them. They are now called Pickereelweed in the Northern States. The articulated stem at the leaf and spatha is similar to that of those *Amaryllis* lately divided on that score.

426. *CLINTONIA* Raf. 1817, 1819, *Anal.* 1820 *Med.* fl, 1830, *atl. j.* 1832, adopted by Beck 1833; not the *Clintonia* of Lindley 1829 which is my *Gynampsis* 1833—Beautiful distinct G. of mine indicated since 1817 in my reviews, described in 1819 in Silliman's *Journal* and 50 *N. G.* of plants: it is formed by the plants blended in *Dracena borealis* and since united to *Convallaria* and *Smilacina*! that have quite a peculiar habit and a bilocular berry, striking character common with *Styrandra*, but this has only

4 stamens. See my med. flora article *Sigillaria*, and my flora tellur. for the Genera blended in *Convallaria* and *Dracena*. The characters of *CLINTONIA* are perigone corolliform 6parted campan. deciduous, 6 stamens inserted at the base, filiform, anthers oblong, style compressed, stigma bilobe compressed. Berry bilocular, cells polysperm. *Roots creeping perennial, stem scapose leafy at the base only, flowers terminal geminate or umbellate whitish, berries blue*—they are rare plants of the Canada region and the highest Mountains, flowers vernal, called *Cuscum* by the Linapian tribes. Dedicated to my friend the worthy D. Clinton a worthy Philosopher, Naturalist and Botanist as eminent as Jefferson. Beck reduces the sp. to *C. borealis* and *multiflora* which are each the type of a subgenus, but include several sp. and varieties, that I have carefully studied.

427. Subgenus *CUSCUMIA* Raf. (or *PODANISIA* if too barbarous) flowers 2 to 5 no bracts, sepals oblong or lanceolate opening like a bell, style equal or longer than stamens, stigma bilobed. *Only 2 or 3 leaves, flowers ochroleucous, peduncles unequal.*

428. Subgenus *ONYXULA* Raf. flowers umbellate 7 to 15 with one or more minute bracts, sepals unguiculate or base attenuated, claws erect, limb oboval spreading or rotate, style shorter than stamens, stigma notched. *Several leaves 4 to 7 subradical, flowers white, peduncles equal.*

429. *CLINTONIA* (*Cusc*) *BIFLORA* Raf. Three similar leaves elliptic cuneate acuminate ciliate, scape smooth elongate biflore, peduncles erect unequal, sepals lanceolate obtuse berries rounded—Apalachian Mts. or Southern Alle-

ghanies, flowers medial whitish, style longer than stamens, stigma quite bilobe, leaves 5 or 6 inches long, scape 7 to 8.

430. *Cl. biflora* *Var. humilis* differs by smaller leaves more cuneate, 3 to 4 inches long, scape 4 to 5.

431. *CL. (Cusc) TRIFLORA* Raf. Leaves 3 dissimilar unequal, 2 elliptical, 1 lanceol. smaller, all ciliate acute, scape pubescent elongate triflore, peduncles unequal pubescent erect, sepals oblong obtuse berries globular—Mts. Alleghanies on rocks in summits of ridges, humble, leaves 4 to 5 inches long, scape 5 to 6, flowers pale, commonly 2 peduncles opposite shorter incurved with nodding flowers, one erect longer. *Var. tridens*, the peduncles subequal like a trident.

432. *CL. (Cusc) ANGUSTIFOLIA* Raf. subcaulescent, leaves 3 similar alternate elongate narrow cuneate lanceol. acumin. ciliate, scape smooth subequal to leaves, commonly 5flore, peduncles unequal flexuose, sepals oblong obtuse, berries globular—summits of Central and Northern Alleghanies, larger plant nearly pedal, with narrow leaves 8 to 10 inches long and only one wide, flowers smaller than in the two last, but berries larger.

433. *CL. (Cusc) FALCATA* Raf. Leaves 3 dissimilar, 2 broad lanceol. acum. one narrow lanceol acute falcate, all smooth like scape elongate 3-4flore, peduncles subequal erect, berries oblong—found only once in fruit on the summit of the Oquago Mts. leaves equal in length about 6 inches, scape 9 inches, peduncles elongate uncial fastigate.

434. *Cl. falcata* *Var. tridens*. Raf. 2 leaves radical elliptical lanceol. one on the stem quite

narrow falcate, scape triflore, peduncles pubescent shaped like a trident. Also on the Oquago mts.

435. *CL. (Cusc) PODANISIA* Raf. annals 118. Leaves 3 similar elliptical acute ciliate, scape pubescent double of leaves, umbel 4-5flore pubescent, peduncles very unequal mostly incurved, flowers erect, sepals lanceolate acute, berries globular.—summit of Backbone mts. of Alleghanies, leaves 4 inches long, scape 8 inches, flowers large whitish.

436. *CL. (Cusc) NUTANS* Raf. 1819. borealis Beck 1833. *Convallaria* and *Smilacina borealis* of some botanists P. N. E. not in Mx. nor Torrey. Subcaulescent, leaves 3 to 4 similar obovate or broadly elliptical acuminate ciliate, scape longer 5-6flore smooth, peduncles unequal nodding, sepals oblong obtuse, style shorter, berries oblong—Kiskatom and Oquago mts. Alleghanies of Pennsylv. and the most common kind, yet not seen or overlooked by some botanists, quite distinct from the last by larger flowers not white but yellowish; and oblong berries as in *Cl. falcata*, 8 to 10 inches high. A fine specimen has 3 leaves and 6 flowers.

437. *Cl. nutans* *Var. bifolia* Raf. differs by 2 leaves, umbel 4flore, peduncles erect subequal. Mt. Pocono of Alleghanies.

438. *Cl. nutans* *var. flexipes* Raf. differ leaves twin long elliptic acute, scape flexuolate elongate 3flore, peduncles pubescent unequal flexuose, berries ovate oblong. Mts. Tuscorora and Mahantango of Alleghanies, scape pedicel, flowers pale. Perhaps rather a var. of *Cl. triflora*.

439. *CL. (Cusc) OPHIOGLOSSOIDES* Raf. cau-

lescent, only one radical leaf obovate acute ciliate, a stem leaf smaller oblong lanceol. acute, scape pubescent 4flore, peduncles pubescent unequal, 2 shorter incurved, 2 longer erect, berries globular—Sent me from Michigan, semipedal, leaves 3 or 4 inches. Is it a var. or deviation of *Cl. podanisia*?

440. *CL. (Cusc) LATIFOLIA* Raf. Leaves 4 similar short broad subovate abruptly acum. ciliate, scape elongate 4flore, smooth, peduncles erect subequal, sepals oblong, obtuse, style elongate, berries oblong—Mts. Taconick and hills of New England, probably in Canada also, scape pedal, leaves 4 to 6 inches, flowers ochroleucous larger even than in *Cl. nutans*, with style longer than flower, a large bilobe stigma, leaves really broadly oval.

441. *CL. (Cusc) BIUMBELLA* Raf. Leaves 3-4 similar elliptical ciliate, scape with 2 umbels the lateral 2-3flore, the terminal 4flore, peduncles smooth unequal, petals lanceolate obtuse, berries globular and oboval—Mts. Alleghany, pedal, fruits singular unequal in size and shape.

442. *Cl. biumbella* *Var. aitonii* Raf. *Cl. aitonii* Raf. atl. J. p. 120. *Dracena borealis* Ait. Andr. repos. t. 206. Leaves undulate not ciliate? scape flexuose, 2 umbels 3-4flore nodding berries globular—from Canada and Hudson Bay, cultivated in England. Is it a peculiar sp. to be called *Cl. undulata* or *Aitonii*? the figure in Andrews represents the stigma as oblique truncate dilatate emarginate?

443. *CLINTONIA (Onyxula) PARVIFLORA* Raf. annals 117. Leaves 5-6 elliptical or lanceolate acuminate, margin and nerves ciliate, scape equal to leaves pubescent, umbel 5-6flore bract obsolete, peduncles erect equal, sepals ungui-

culate spatulate obtuse, berries globular.—Summit of the Central Alleghanies of Maryland, only found once in 1818 on a single rock, small plant 4 or 5 inches high, flowers snowy white not spotted very small, limb of sepals rotate obovate. Certainly distinct from all the next.

444. *CLINTONIA* (Onyx.) *ODORATA* Raf. *Dracena borealis* Big. Conval. umbel. Mx. Eat. *Smilacina* do. P. N. E. T. Leaves oblong elliptical with an obtuse point, ciliate, but nerves smooth, scape elongate pubescent above, umbel multiflore 9-15 flore, a short oblong bract, peduncles subequal, sepals unguiculate spatulate undulate obovate obtuse, berries globular—Mountain bogs from Canada to Carolina says Beck, never met by me, my specimen is from Collins H. and has only 9 flowers, they are white and small but larger than the last, Michaux says they are odorous and have some red dots; no other kind is odorous. This is the only sp. known or acknowledged by Torrey and others, who have never travelled in the Mts. in the vernal season.

445. *Cl. odorata* var. *decantha* R. my *Cl. decantha* of atl. J. only differ by 10 flowers petals lanceolate (acute?) 4 leaves oblong acute.—In the Mts. of Virginia, seen dry.

446. *Cl. odorata* var. *multiflora* Raf. my *Cl. multifl.* of atl. J. only differs by leaves large elliptical acute, scape pedicel smooth, umbel of 12 to 15 flowers, white sepals obovate acute?—Seen in the herb. of Torrey as Conval. umbellata, from Canada, is it odorous? is it rather a var. of the next sp?

447. *CLINTONIA* (Onyx) *FULVA* Raf. Leaves ample cuneate elliptical acumin. glaucous ciliate, nerves smooth, scape subequal sulcate cos-

tate, pubescent above, umbel multiflore (16) peduncles unequal some forked fulvous villose, bracts obsolete sepals unguiculate ovatoelong acute, berries globular—found in Collins herb. as Conv. umbel. certainly not the same as the last, distinct by leaves, scape sulcate, larger flowers nearly as large as in Cl. podanisia, apparently fulvous or nankin color, leaves 8 inches long.

448. CLINTONIA (Onyx) GLOMERATA Raf. Leaves 3-4 similar obovate elliptical obtuse ciliate, scape equal villose above, umbel multiflore, bract lanceolate elongate, flowers subsessile glomerate pubescent—Apalachian and Wasioto Mts. my specimens have the flowers not quite unfolded with a longer bract. Only 3 to 4 inches high, quite distinct by obtuse leaves and sessile hairy flowers.—Thus I have noticed about 20 sp. or striking var. of this pretty G. I had only 7 in my remarks of 1832. None of our Botanists know them, because rare vernal and alpine ; or when seen mistaken for a single kind ! yet I venture to say they all originate from 4 or 5 original types.

449. ETHEOSANTHES Raf. Neog. 42. fl. tell. 27. Near Tradescantia, difference Calix and Corolla unequal, one petal larger concave, stamens 6 unequal curved villose, 3 longer. *Stem ramose, flowers racemose without spathe*—a fine Genus described by me as early as 1825, seen alive since 1820 in the gardens of Kentucky where received from Louisiana. I collected 50 specimens and have sent it to all my correspondents. I sometimes spelt the name *Eothinanthes*, both mean evanescent flowers.

450. ETHEOSANTHES CILIATA Raf. stem erect

dichotome, leaves ovate acute undulate ciliate, flowers racemose secund.—Texas and Louisiana, fine plant 3 feet high, leaves 2 or 3 inches long, flowers large blue, the 3 petals are quite evanescent, lasting only one hour expanded towards noon, but the calix is persistent as in *Tradescantia*. See in fl. tellur. my reform of the Genera blended in *Tradescantia*; without attempting to give a complete Monograph of our real *Tradescantias* (which now amount to about 15 species:) I shall here chiefly enumerate my new species and varieties.

451. *TRADESCANTIA VIRGINICA* L. this well known linnean sp. may be known by the lanceolate smooth leaves, long foliose involucre of multiflore umbels and villose calix; but so many sp. and var. are blended with it in gardens and herbals that it is needful to attend to many other differences, as will be seen below in my New sp.

452. *Trad. Virginica* Var. *alba*. Hooker b. m. 3501. this white flower variety is not my *Tr. ohioensis*.

453. *TRAD. OHIENSIS* Raf. precis 146. Leaves flat linear acute smooth, umbel multiflore, involucre longer than flowers, calix smooth.—In Ohio, flowers white, described in 1814 from a specimen of Dencke given me by Vanvleck, but I have not met it in Ohio, and it may be a var. of my *Tr. levigata*.

454. *Trad. virginica* Var. *purpurea* Raf. differ by leaves narrow lanceolate, 6 to 10 inches long, umbel pauciflore 5-6fl. petals purple—seen only in gardens, not met spontaneous, yet probably a peculiar sp. *Tr. purpurea*.

455. *Trod. virgin var. barbata* Raf. differ by umbel. pauciflore 5-6fl. calix smooth except

a tuft of hairs at the tip—very different from my *Tr. barbata*, only seen in gardens, leaves broad, involucre large long not bearded.

456. *Trad. virgin. var. ramosa* Raf. 3 to 4 feet high much branched, with large leaves and flowers. Another garden variety.

457. *Trad. virgin. var. angustifolia* Raf. Probably the real type of Virginica, since the most frequently found wild by me on the R. Schuylkill, the hills of Maryland and Virginia. Stem simple pedal, leaves linear lanceolate very long, longer than stem, 6 to 9 inches, flat and margin ciliate at the base. Umbel multiflore 6-12 flowers nodding, 2 foliose involucre flat subequal 3 to 4 inches long, peduncles and calix pilose, flowers rather small, vernal in May. Roots perennial fasciculate. If a peculiar sp. it may be called *Tr. ciliata*.

458. *TRAD. LEVIGATA* Raf. Quite smooth ramosa, leaves narrow lanceolate elongate flat glaucescent, base dilatate undulate and vaginate, umbels terminal and axillary multiflore glomerate, involucre foliose lanceol. unequal, calix smooth glaucous or incarnate—in the Appalachian Mts. of Virginia and Carolina, introduced in our gardens, 2 feet high, very pretty, flowers blue. A var. *incarnata* has flesh colored flowers.

459. *TRAD. BARBATA* Raf. Smooth simple, leaves linear lanceol. canaliculate pale elongate erect; umbel pauciflore involucre subunifoliate very short, peduncles unequal erect; calix bearded at the tip as well as the involucre—Illinois and West Kentucky, pedal, flowers blue 4 to 5. Several varieties.

460. *Trad. barbata var. pumila* Raf. diff. semipedal, invol. bifoliate base swelled. Kentucky.

461. *Trad. barbata* var. *trachiloma* Raf. Diff. Leaves and invol. rough or subciliolate on the margins, two invol. very unequal. Kentucky.

462. *TRAD. CANALICULATA* Raf. atl. J. p. 150. Quite smooth simple slender, leaves slender linear narrow canaliculate, falcate umbel pauciflore, invol. short flat very unequal, flowers smooth nodding.—In Kentucky and Missouri; estival blue flowers, stem pedal, different from *Tr. levigata* by narrow hollow falcate leaves few flowers &c. described since 1832 in Atlantic Journal.

463. *TRAD. RUPESTRIS* Raf. atl. J. 150. Simple smooth, leaves elongate narrow canaliculate, umbel multiflore, invol. foliose divaricate very long, peduncles pilose—Cliffs of Ohio and Wabash R. it has the leaves like the last and flowers like 457. Estival pedal.

464. *TRAD. BREVICAULIS* Raf. atl. J. 150. Stem simple very short flexuose, leaves much longer narrow nearly flat carinate, sheaths tubular ciliate, umbel pauciflore, invol. similar to leaves, peduncles and calix very pilose—Illinois and Kentucky, stem 5 to 6 inches high, flowers blue and small vernal.

465. *TRAD. PUMILA* Raf. Nearly stemless quite pilose, scape 1-2 inches strait, leaves few lanceolate ciliate, umbel multfl. 8-12fl. involucre foliose subequal larger and broader than leaves, pilose, peduncles filiform unequal pilose, calix pilose—a very fine singular sp. found near the Kentucky R. in abundance in a single spot in 1821. Quite dwarf and with long soft hairs, sometimes quite scapose, leaves longer than stem radical commonly 2 with membran. sheaths. Flowers quite large blue vernal.

466. **TRAD. PILOSA** Lehman 1827. Hook. b. m. 3291. Stem flexuose nodose villose above, leaves broadly lanceol. undulate pilose, umbels terminal multiflore, involucres foliose, peduncles and calix villose.—Louisiana and Florida.

467. **TRAD. AXILLARIS** Raf. *subaspera*? *Lodiges* cab. *flexuosa* Raf. atl. J. 150. Stem ramose sulcate often flexuose, leaves broad lanceolate flat pubescent pale beneath, margin rough, umbels axillary subsessile, involucres lanceol. short peduncles and calix villose.—In Central and West Kentucky, estival, flowers dark blue handsome, stem 2 or 3 feet high, leaves one inch broad 4 to 6 long, rather rigid. *Var. flexuosa*, stem dichotome zigzag. 2 *subaspera* leaves roughly pubescent.

468. **TRAD. DISCOLOR** Raf. *virginica* var. *pilosa* Lindl. bot. reg. 1055? Stem strait pilose simple. leaves lanceolate divaricate ciliate, glaucous and pilose beneath, umbel terminal multiflore lax, involucres foliose divergent, peduncles short nodding pilose like the calix—In Florida and Alabama, stem pedal and bipedal leaves like the last, but thin, smooth above, not rigid nor rough. *Var. ramosa*, branched, leaves narrow lanceolate.

469. **TRAD. REFLEXA** Raf. Quite smooth, stem subramose slender purplish, leaves remote narrow lanceol. falcate flat, sheaths swelled, umbels multiflore glomerate, the rameal with unifoliate involucre, the terminal with 2 foliose falcate reflexed invol. peduncles often reflexed, calix ciliate at the end—Alabama, sent me as *Tr. virginica*! near to *levigata* and *barbata*, distinct by few leaves far apart 6 to 8 inches long only half inch broad, pale beneath, stem 1 or 2

feet high, flowers small, umbels crowded 12 to 24 flowers.

470. *Trad. reflexa* var. *drepsia* Raf. diff. umbels pauciflore 6-8fl. 2 invol. quite equal fal cate. Alabama.

471. *TRAD. ROSEA* Mx. Carolina to Louisiana, very distinct sp. by many short involucres, smooth graminiform leaves and rosate flowers.

472. *Trad. rosea* var. *pauciflora* Raf. *Tr. graminifolia* Raf. atl. J. 148. differs by few unequal flowers in the umbel. Florida and Alabama.

473. *TRAD. DIVARICATA* Raf. atl. J. 148. Leaves remote divaricate oblong lanceolate, umbels multiflore, invol. 2 subequal lanceol. divaricate, calix smooth.—In Florida, near the next, but quite smooth and umbels different. Seen in the herbal collected by Gates.

474. *TRAD. RIPARIA* Raf. stem simple, leaves oblong lanceolate flat abbreviate smooth, base and sheaths ciliate, single terminal umbel 3-5 flore, involucre 2-3foliose subequal, peduncles short erect calix bearded—a very distinct and rare sp. only found once in 1818, in the bed of Green R. in Kentucky near the mouth of it, and since received from Alabama; it has the habit of a *Commelina*, the stem only 6 to 10 inches high, leaves shorter than in any other kind 1 to 3 inches long, thin and smooth, invol. similar, flowers pale blue as in *Commelina*, estival, blossoming in August.

475. *DIOSCOREA MEGAPTERA* Raf. scandent, leaves alternate smooth cordate acuminate 7 to 9 nerved, petiols elongate spikes axillary ramose lax, fruit large uncial fulvous rounded with 3 wide wings—in Kentucky, estival, near to *D. villosa* but smooth and fruit uncommonly

large, emarginate at base, leaves pale beneath. This tropical Genus extending to N. America has there many more sp. only two were known, I shall add 6, they have all perennial thick roots called yams.

476. *DIOSCOREA HEXAPHYLLA* Raf. erect, leaves whorled by 6 on very long petiols, subcordate shortly acuminate smooth glaucous beneath with 11 fulvous nerves, spikes whorled ramose filiform. flowers often geminate—Appalachian Mts. of Virginia, stem rigid brown tripedal. Near to *D. quaternata*, first leaves opposite.

477. *DIOSCOREA REPANDA* Raf. stem flexuose scandent, leaves whorled by 4 below, alternate above, petiols equal to leaves filiform sulcate hairy above, leaves smooth ovate acuminate base reniform, margin repand, beneath glaucous 11 nerved, spikes short, capsules small fusate—Virginia and Alabama in hills, leaves large truly repand hardly cordate, apex falcate acuminate.

478. *DIOSCOREA LONGIFOLIA* Raf. scandent, leaves ovatoblong base deeply cordate, lobes elongate proximate, apex acuminate, smooth concolor 5nerved, lateral forked—sent me from Alabama without flowers, leaves 6 inches long 3 broad.

479. *DIOSCOREA SATIVA* L. cult. in Florida, and perhaps wild also.

480. *DIOSCOREA BULBIFERA* L. The sp. was found at Mobile by Bartram (trav. p. 439) cultivated 60 years ago. It is remarkable by the large kidney bulbs 1 to 3 together axillary of leaves, tasting like the Yam root. My specimens have large cordate leaves 8 to 10 inches long, quite smooth acum. with 7 nerves lateral forked.

481. **PROVENZALIA** Adanson 1763. Raf. fl. tel. 679. *Calla* L. and Authors which is root of *Cala-dium*. *Cala-mus* &c Of this boreal G. only one sp. is admitted said to be common to both continents, but I shall now describe 4. *C. ethiopica* is a peculiar Genus, which I call **OTOSMA**; *C. oculta* of Loureiro another that I call **SPIROSPATHA**, see fl. tel. *Calla* ought to have been written *Callaion*! see Smith.

482. **PROVENZALIA** (or *Callaion*) **PALUSTRIS** Raf. Leaves similar cordate subacuminate, scape equal to petiols, spatha ovate cuspidate—in boreal Europe and America, Canada, &c. Var. 1. *parvifolia* leaves uncial.

483. **PROVENZALIA** (or *Callaion*) **HETEROPHYLLA** Raf. Leaves dissimilar reniform or cordate acute, or rounded cordate obtuse, scape equal to petiols, spatha elliptic cuspidate—Hudson bay and Sibiria. probably also Origen, rhizome or radicant stem articulated with fibres, leaves on long petiols unequal in size and shapes from 1 to 3 inches long or broad.

484. **PROVENZ.** (or *Callaion*) **BREVIS** Raf. Leaves ovate base subcordate subobliqual, apex acuminate, petiols very long, scape very short, spatha elliptic retuse cuspidate—Lakes and Swamps of the Alleghanies, Mt. Pocono and others. Roots fibrose matted very long, petiols thick 6 to 8 inches long, leaves 3 to 4 inches long, scape about 3 inches high.

485. **PROVENZ.** (or *Callaion*) **BISPATHA** Raf. Leaves ovate base cordate end obtuse or hardly acute, scape equal to petiols, spatha double large ovate acuminate not cuspidate, divaricate—from Origen collected by Walton, petiols and scapes thick: flowers very peculiar by the double divergent spathas (anomaly in the family of Aroides) foliaceous 2 or 3 inches long

base amplexic. subalternate, spadix large elliptic, leaves 4 inches long, 3 broad. This shall form my subg. *Callaion*.

486. *TYPIA CRASSA* Raf. atl. J. p. 148. *latifolia* of Amer. bot. not L. stem humble foliose, leaves equal to stem, flat above, convex beneath at the base and not vaginate, end obtuse, spikes united and thick subequal, a bract between them ovate lanceol. membranaceous—Canada to Maryland and Missouri. Stem only 3 to 4 feet high, spikes 4 to 6 inches long, one inch thick, lower brown very dense, leaves half inch broad. In marshes as all the sp.

487. *TYPIA ELATIOR* Raf. atl. J. p. 148. *latifolia* Elliot and Southern botanists not L. stem gigantic, leaves shorter broad flat base vaginate, end acute, spikes confluent terete without spatha—Carolina to Kentucky, 6 to 10 feet high, stem round solid and smooth, leaves one inch broad. These 2 sp. are certainly different from the *latifolia* of Europe.

488. *TYPIA SPIRALIS* Raf. atl. J. p. 148, *latifolia* Sw. Lunan &c. Leaves spirally contorted, ensiform and vaginate at the base, end flat thick obtuse, spikes annexed each with a spatha—Florida, Cuba and Jamaica, mistaken also there for the *latifolia*, different from *T. domingensis*.

489. *TYPIA GRACILIS* Raf. *angustifolia* of Amer. bot. not L. stem slender, leaves equal narrow flat glaucous acute, beneath hardly convex and striated, spikes subequal slender widely divided without spathas—New Jersey to Virginia in marshes and near streams, 4 to 6 inches long, divided by a bare space of 2 or 3 inches.

490. *TYPIA ANGUSTIFOLIA* L. &c. My specimens of this European sp. differ from the last

by very long leaves 3 or 4 feet long, thus longer than stem less glaucous, same breadth but concave or canaliculate above, beneath quite convex and subangular, spikes unequal, lower or female 8 or 9 inches long, upper or male only 4 or 5 inches separated only by a space of one inch.

There is another undescribed sp. in Oregon, and several in Asia, Australia, &c, besides the *T. domingensis*, *media* and *minor*, all different from ours.

491. *IRIS FLORIDANA* Raf. nearly stemless glaucous, leaves graminiform carinate trinerve not gladiate, scape uniflore shorter than leaves, petals spatulate obtuse smooth, 3 patent larger and 3 reflexed—Florida and Alabama, small 6 inches high, scape 4 inches, stigmas yellow pandurate obtuse. A striking species with small white flowers, ovary filiform striate, bract subulate.

492. *IRIS BIFLORA* (or *virgata*) Raf. stem slender virgate bisulcate biflore, leaves gladiate narrow graminiform nervose, striate, 2 spathas membran. lanceol. striate peduncles filiform, petals narrow beardless unguiculate below, tube very short.—Cheroki Mts. of Unaka, found by Mrs Gambold, Collins Herb. stem bipedal quite virgate few leaves, upper very short, spatha convolute acute subequal, ovary oblong, tricostrate pinched above at the union with the corolla that is hardly tubular at base, flowers middle size, petals pale blue cuneate obtuse, the 3 inner petals not much shorter, stigmas or rather styles deeply divided to the base similar to petals but bifid at end. By this and corolla almost a subgenus to be called *STENILIS*. If biflora is preoccupied it will be my *I. virgata*.

493. *IRIS CONVOLUTA* Raf. stem slender te-

rete uniflore, leaves slender convolute striate mucronate, spatha bivalve striate, petals beardless subequal oblong end flabellate, stigmas lanceolate acute—Arkansas and Texas, another very peculiar sp. of this fine genus, one or 2 feet high, leaves long but shorter than stem, spatha convolute elongate inclosing the long ovary, flower large versicolor, petals fulvous edged with white, large end rounded tinged with blue like the stigmas.

494. *IRIS BREVICAULIS* Raf. fl. lud. 55. stem angular pauciflore very short flexuose, leaves gladiate very long, terminal flowers geminate, spathas bivalve lanceol. equal to flowers, petals and stigmas beardless narrow subequal—Louisiana to West Kentucky, seen alive 1823, desc. by Robin long before, neglected as usual by our botanists. Stem only 6 to 10 inches 3-5 flore, leaves 12 to 18 inches, mostly radical, flowers very large vernal, white with blue tinges and base yellow, capsules hexagone.

495. *IRIS GLUMACEA* Raf. stem angular fistular flexuose pauciflore, leaves shorter gladiate striate, flowers solitary and geminate, spathas 3-5valve glumaceous ovate, petals beardless spatulate spreading yellowish white—Glades of Alleghany Mts. akin to last, yet very distinct by broad glumaceous spathas, 3 petals much smaller, tube of corolla slender elongate.

496. *Iris glumacea* var. *angustifolia* Raf. diff by stem not flexuose, leaves narrow gladiate, 2 or 3 flowers, spathas fulvous, petals pale yellow—in the glades of Illinois, if a peculiar sp. it may be called *I. pallens*.

497. *IRIS AUREA* Raf. atl. J. p. 80. Stem strait biflore, leaves longer broadly gladiate, end acum. falcate, flowers geminate beardless, 3 petals obovate entire, 3 lanceolate undulate,

stigmas dilatate notched—in the ponds of high Alleghanies, discovered by Mr. Carr on the Pocono Mt. and brought by him to Bartrams garden, where seen alive and compared with *I. pseudacorus* very akin, but with bifid toothed stigmas. 3 or 4 feet high, flowers small golden yellow, the 3 inner petals shorter than stigmas, equal to anthers, capsules oblong deeply sulcate.

498. *IRIS FULVA* Mg. cuprea P. N. E. rubescens Raf. fl. lud. 56. This sp. of Louisiana is easily known by its flowers of a coppery or brick red color. I have seen it alive in gardens since 1817 and ascertained that my *I. rubescens* was only a var. of it with leaves rather longer, and flowers darker brick red. Vernal.

499. *IRIS LACUSTRIS* Nut. Dwarfish creeping stemless uniflore, leaves longer glaucous narrow gladiate, spatha convolute lanceol. acum. shorter than tube, petals beardless obovate subequal 3 patent spotted, 3 erect, stigmas shorter bifid dentate—On Lake Erie &c, disc. by Nuttall, found by me again 1825 and seen also in gardens, vernal in May. Scape only one inch high, flower 3 to 4 inches long, tube rather longer than sepals, flower with a faint iris smell, of a violaceous color with a large saffron spot on 3 petals and dark dots on the claws and base of sepals. Leaves strait erect 6 to 10 inches long, often margined with white. My description is original and made on the living plants.

500. *IRIS TRIPETALA* Walt. El. Hooker b. mag. 2886. tridentata Pursh. A fine rare sp. from Carolina and Florida, easily known by the narrow leaves and 3 inner sepals very short tridentate. Well described by Elliot and Hooker, my specimen is from Elliot; the flower appears blueish, the 3 large sepals unguiculate, end flabellate, the 3 smaller reflexed.

Thus I have given here 10 sp. of *Iris*, either new or quite rare; this account doubles our knowledge of this Genus, of which we have now about 20 sp. I possess nearly all the others *Iris cristata*, *verna*, *virginica* (these 3 often blended like the 3 next) *versicolor*, *prismatica*, *gracilis*, *hexagona*, *missurica*, *sibirica*, *tenax* figured by Hooker 3343 and Lindley 1218. These two last are from Oregon. I shall perhaps resume a monograph of this pretty genus.

APPENDIX.

My Genus *DIPLOSTELMA* 316 which Nuttall had wrongly reduced to *Actinocarpus* in Collins herb. (there is no such genus, he meant probably *Actinospermum* of Elliot) has been described by him under the name *CHETANTHERA* in his new plants 78, without any reference to former name! whence it escaped my notice; but he has only one sp. *Ch. asteroides* (a bad name) which is my *Dipl. pumila*, the rays are violet and the blossoms are vernal. I have added 2 other sp. and my name is the best, although Nuttall's dates of 1834, *Chetanthera* means bristly anthers, while this is not the case, he ought to have named it *Chetopappus*, but as the pappus is double and different mine is the best and must be retained.

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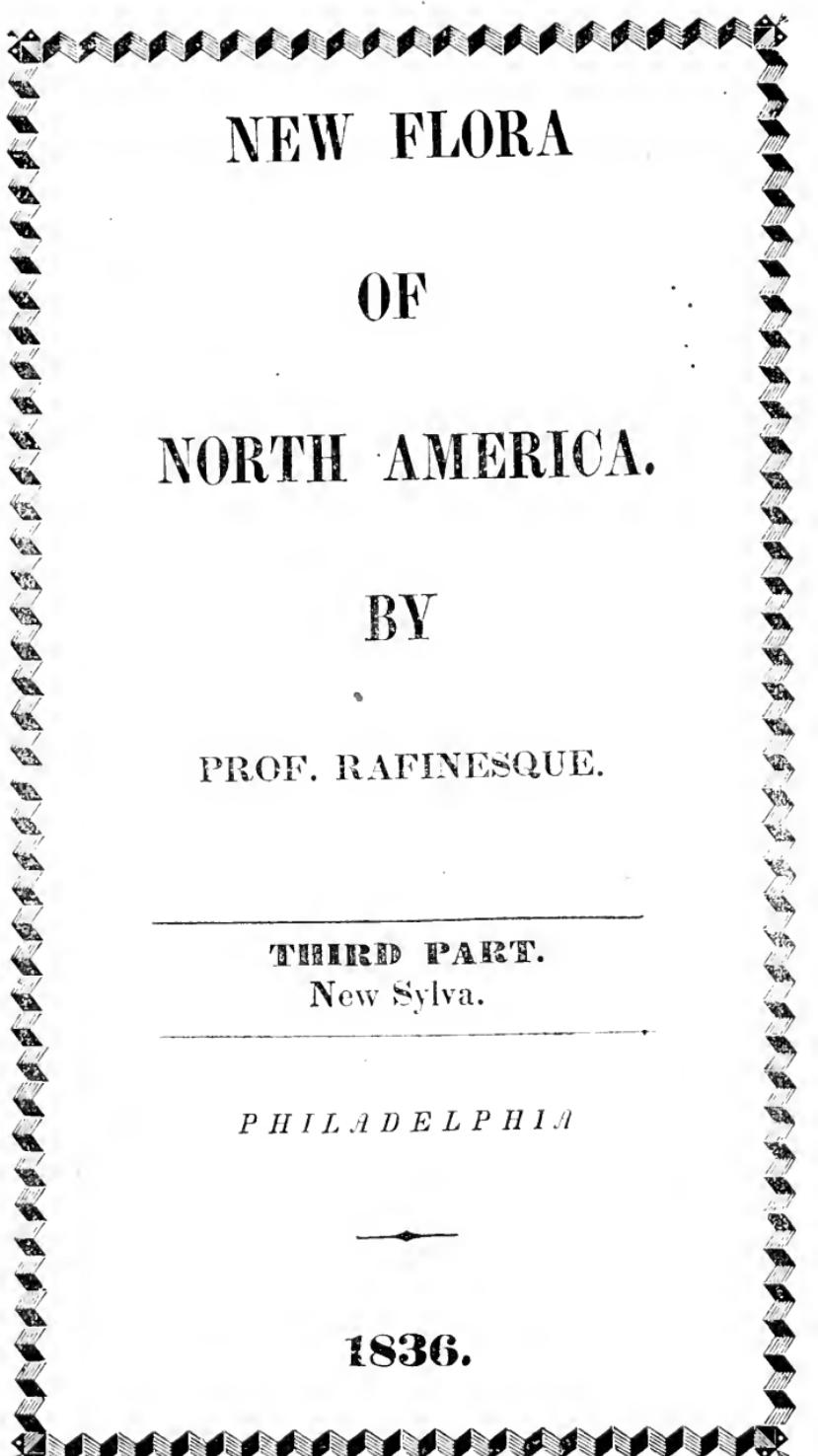
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*The Floral wealth in this wide land concealed,
Will be at last by learned care revealed.*

PHILADELPHIA:

PRINTED FOR THE AUTHOR AND PUBLISHER.

1836.

NEW SYLVA OF NORTH AMERICA.

Or the New and revised Trees, Shrubs and Vines observed, collected, and ascertained or corrected between 1802 and 1836, by C. S. Rafinesque &c: all figured in my **AUTIKON** and **ICONES** unless otherwise stated.

The Trees and Shrubs of North America have received very early attention, because they could usually be cultivated in Europe in the open grounds; several were introduced there long ago: Duhamel wrote chiefly upon them about one hundred years ago. Michaux and his son were sent to collect them for the public nurseries of France. Partram and Marshall collected them here for English nurseries, and Marshall published in Philadelphia about 50 years ago, a general account of those known to him. He was followed and improved upon by Castiglione in Italy and Vangenheim in Germany, who both wrote on North American Trees and Shrubs, publishing figures of many. In England Miller, Trew, Catesby &c, published also many figures of them in their works; but they were all exceeded by Michaux junior who after publishing the splendid Monograph of American Oaks of his father, printed both in French and English a very good special work on our Trees.

Watson, Jacquin and others have since published iconographical dendrologies, and several monographs have appeared; among which deserve peculiar notice, those of our Willows by Muhlenberg, Wildenow, Smith &c, Pines and Firs by Lambert, our Ash trees by Bosc increased by him to 27 species, and my N. Am. Roses 1820 increased to 25 species, with my

N. A. Grape Vines 1830, increased to 40 species, just as good and proper as the 40 willows and 36 oaks of our Authors.

All our botanical writers have of course attended more or less to our trees; but the only late special work upon them is an American Sylva with wood cuts published in 1832 by D. Browne in Boston, which however only contains 150 trees and shrubs, being a kind of abridgment of the larger work of Michaux junior, with all its faults and omissions, having forgotten like him, the Genera Sorbus, Aronia, and others, with many Cherry and Plumb trees, Ash trees, Willows and Poplars, &c. Besides all the large Shrubs and Vines, Palms and other monocotyle woody plants.

A true Sylva ought to include besides Trees, all the Shrubs that form the undergrowth of forests or fringe the banks of Rivers. In fact there is no actual difference between them in size; since all young trees are shrubs, and many shrubs become trees when old or in warmer climates. It is commonly stated that Trees have only one stem, while shrubs have several shoots; but many of our trees have several stems, while many shrubs assume the appearance of small trees by having only one. The distinction is therefore merely nominal, as between Rivers and Creeks, Lakes and Ponds, Mountains and Hills

Bushes or under shrubs unite likewise the shrubs to plants, the difference being the permanent perennial stem.

Twining or trailing shrubs are called Vines and creepers and belong also to the sylvan Flora; but there are Vines that are not woody, therefore perennial or annual Vines.

The woody structure and permanence over ground during Winter under a state of hybernation, with evergreen leaves or sleeping buds, might most properly distinguish this series of Vegetation, and **XYLOGY** might be a better term to apply collectively to their knowledge than Dendrology and Thamnology.

Every one of the Botanical Regions of North America is distinguished by peculiar Trees, Shrubs and Vines; in fact they form the most prominent feature of each by their size and permanence. See my botanical regions.

Although so much attention appeared to be paid to these ornamental and useful productions, it was only lately that the multitude of our Pines, Oaks, Willows, Poplars, Ash trees, Hicories, Vines, Roses &c have been ascertained: and it is a fact that many Genera are as yet little attended to or in utter confusion; many species and varieties being overlooked or blended as were formerly those of Oaks, Ash trees before Bosc &c: my own sp. of *Rosa* and *Vitis*, well distinguished by me, are nevertheless invisible to some blind Botanists around me. I have been engaged for years in studying the fine Genus *Prunus*, now divided into *Prunus*, *Cerasus*, *Padus*, *Orospondias* &c, and instead of 20 I know 30 or 40 species of it. I have discovered and possess a crowd of N. sp. belonging to the Genera *Prinos*, *Ilex*, *Spiraea*, *Ceanothus*, *Rhamnus*, *Celtis*, *Pavia*, *Hydrangea*, *Viburnum*, *Caprifolium*, *Evo-nymus*, *Clematis* &c. I have even some new Genera of shrubs to describe in this Sylva.

The Genera *Vaccinium* and *Andromeda*, must be divided into many, and quite reformed, revised, corrected as to sections and species.

Calycanthus, *Hamamelis*, *Crategus*, *Viburnum* &c demand also a new revision. *Abies* and *Aker* have been partly corrected in the Lexicon of first part. *Salix* and *Populus* certainly require to have subgenera or better sections.

Much therefore remains to be done to detect, describe and name properly all our woody plants. I hope to do something towards it in this NEW SYLVA. My reward will probably be as usual a denial of justice and neglect of my species, until they shall be introduced at great cost into the European Nurseries. It is said that a gardener that introduces a new Tree or Shrub in England, often makes a great deal of money by it ; but the learned Botanist who by 20 years of travels and exertions detects the locality, sends specimens or seeds, is unrewarded : nay it is expected that he should *give away* his specimens and seeds ! If like myself he has discovered 100 or 200 new trees and shrubs, he is expected to *give them all away* for nothing ! and not believed unless he does !

In the name of justice, pray why is a Botanist to be denied the privilege of Nurserymen and Sellers of plants ? Michaux was paid for his collections and informations, Bosc has been rewarded. Vanderschot was sent from Germany on purpose to collect seeds of trees by the Prince of Lichtenstein who has planted forests of American trees there.

If I had been attended to and rewarded I could have introduced into our gardens, nurseries, and those of Europe, all my new Grape Vines and Roses, with 100 other fine trees and shrubs discovered by myself between 1802 and 1836. If they are yet unknown there or are very

rare, it is because after paying myself all my expenses of travelling, collecting, preserving &c I cannot afford to double them for others without reward.

Some of our trees have a wide geographical range, being found from Canada to Louisiana, such are *Cornus florida*, *Cercis canadensis*, many Oaks, Maples &c; but others are confined to narrower limits, or even few localities. The *Magnolia macrophylla*, *Virgilia* or rather *Cladrastis*, *Hamiltonia*, *Bigelovia*, *Franklinia*, *Planera* &c have each been met with only in 3 or 4 places as yet by botanists, altho' probably growing in others; but when found they are commonly abundant in the station. There are however solitary trees and shrubs that are never or but seldom found in groves or social groups; such are some *Pavias*, *Calycanthus*, *Crategus*, &c, with many that I shall enumerate in this Sylva.

The foliation, floration and semination of our woody plants, deserve to be better studied as to periods and duration, in order to seek them at the proper times and places.

Their station is not always in Groves and Forests; many are only found on the Sea Shores, these are called maritime—others in sands, or among rocks, in high Mountains, or along the banks of streams, or in marshes and swamps: they must be called arenarian, rupes-tral, montaneous, riparian and palustral.

As to foliation they must be divided into evergreens and deciduous. These last vary much in the time they put on and drop off their leaves. I have made 4 series of them in my dissertation on the foliation of our Trees, 1. Early leaves of long duration as Willows, Ma-

ples, Larch &c, 2. Early leaves of short duration as in Parias, Prunus &c. 3. Late leaves of long duration, as in Ash trees, Oaks, Chestnuts &c, 4. Late leaves of short duration, as in Catalpa, Liriodendron &c ; but the exact times vary by 2 months from Canada to Florida, and in Florida many deciduous trees become nearly evergreens

The floration is either early or late vernal as in most species, before the leaves or with them Early or Late estival ; but few are serotine or autumnal as Hamamelis. The few hyemal trees may be deemed very early vernal. The duration of these flowers is seldom larger than half a lunation, some only last a week or a few days; whence they must be watched. Semination is more lasting, as seeds succeed the flowers, and are often a long while ripening ; in some they even last on the trees and shrubs over the Winter.

The majority of our Northern trees and shrubs belong to the Amentaceous tribe, the Conifers, Rosacea and Senticose, Pomacea, Bicornes, Viburnides, Hederacea &c. As we advance South ; we meet a great variety of Rhamnides, Fraxinides, Magnolides, Ribesides, Akerides, Vitides, Ulmides, Cistides, Araliacea, Terebinthides, Lonicerides &c, while when we reach Florida and Texas, several other natural families appear, the Rubiaceae, Cactides, Laurinia, Eleagnides. with the palms and yucas of the Endogenous series. There also gradually appear the fruticose Malvaceae, Leguminose, Saxifragides, Labiate, Hypericina &c which are either unknown or rare towards the north or even the middle regions of North America.

Few kinds of trees and shrubs are found in

the Missourian regions, with its vast central plains; there they chiefly fringe the banks of streams, seldom forming groves and forests. This scanty dispersion prevails also more or less into the Origen Mts. and Shores, extending South to New Mexico, California, Texas and even Mexico; where the thick extensive Forests of the Alleghanian and Canadian regions are unknown. This straggling growth of Trees prevails also to a certain extent from Louisiana to Florida where groves are intermixt with meadows, glades, sand flats, cane brakes, swamps &c, and even in the Western States, on both sides of the River Ohio, the trees are not so thick set, being far apart and with fewer shrubs for undergrowth.

Of the extensive tribes of Composites, Cruciferous, Euphorbides, Alsinides, Dianthides, Geranides, &c hardly any are shrubby in North America, while so many are such elsewhere. Our shrubby Vines belong chiefly to Sarmen-tacea, Rhamnides, Bignonides, Woodbines, Smilacea &c.

All the tribes of European and Siberian trees or shrubs are found also in North America, and nearly all their Genera likewise, except the Heaths, Daphnes, and a few others. But the American Sylva can boast of a greater number of species in all the Genera, with several peculiar tribes and many American Genera; such as Liriodendron, Magnolia, Asimina. Aralia, Catalpia, Hamamelis, Fothergilla, Gordonia, Dirca, Diervilla, Comptonia, Hicoria, Amorpha, Gleditsia, Robinia, Cladrastis, Chionanthus, Cephalanthus &c.

It is very remarkable that nearly all the American trees, and shrubs except some boreal

Willows, Brambles, Currants, Vacciniums &c are specifically distinct from their congeneric kinds in Europe. The same fact appears in N. W. America and Origon, where most are distinct from the Asiatic Species. In that region the prevailing Genera are Salix, Populus, Abies, Pinus, Ribes, Rubus, Vaccinium, Crategus, Cactus, Prunus, Quercus, Aker, Juniperus, Fraxinus &c with but few peculiar Genera; but we lack as yet a proper account of all the sylvan productions of that region, and even many trees have not been described, much less the shrubs and vines, which are very abundant.

Trees and shrubs may be known by their foliage as well as flowers; in fact they are thus distinguished by Gardeners and the ignorant: their blooming is generally very short, but the seeds or fruits last longer, and are good indications of Genera. Even their bark and wood is of use to discriminate them. It is always important to notice if the leaves are opposite or alternate, distichal or spiral, simple or compound, entire or jagged &c, since these peculiarities of frondose habit almost always indicate generic distinctions.

The North American Mountains cradles of our trees had been disguised by nicknames and mistaken heights, generally estimated too low. I shall restore and use throughout this work the original names. Thus I call the highest by the oldest name of ORIGON (which means hollow noisy ground or Mts. *Oligomunk* in Linapi) those misnamed rocky Mts. shining Mts. and Chipewyan Mts. the snowy peaks of which rise 20 to 25 thousand feet.—The *Apalachian* Mts. are the Southern Alleghanies, the highest be-

ing the *Unaka* or Iron Mts. of North Carolina, their Western ridges are the *Wasioto* Mts. vulgarly Cumberland Mts: the lofty *Kiskatom* and *Oquago* Mts are the N. E. end of the Alleghanies nicknamed Catskill: the *Mattawan* Mts. are those highlands broken through by the Hudson, and East becoming the *Taconic* Mts. The *Saranac* Mts. are those at the head of the Hudson R. misnamed Peru Mts. The *Wapanunk* are the White Mts. highest of New England with naked or unwooded summits, a rarity in this continent.

NEW SYLVA.

501. XEROMALON Raf. calix adherent globular. disk hairy, crown 5parted, sepals unequal foliaceous persistent serrate. Petals 5 oboval concave subequal. Stamens 15 perigyne subequal erect, subulate, base nearly monadelphous, anthers bilocular elliptical. Ovary adherent, styles 5 filiform distinct, stigmas capitate truncate. Fruit umbilicate crowned a dry hard *pomum*, inside 5locular 5seeded, seeds cartilaginous oblong compressed nearly winged around. *Shrub with alternate leaves and terminal flowers*—This Genus has affinities with *Pyrus*, *Aronia*, *Mespilus*, *Crategus* &c, being of same family: it differs from all by the unequal calix, 15 stamens, and dry fruit; the seeds are nearest *Aronia*, yet I apprehend it has been blended with *Crategus*, if already described elsewhere; but I could not find any sp. to agree. Discovered 1818, the name means *dry apple*. Only one species; but all the en. of *Crategus* and *Mespilus* with serrate

or laciniate calyx must be compared, and perhaps are akin, or form another Genus near this: *Cr. parvifolia* is nearest, but is thorny with variable leaves, solitary fleshy fruits, with 5 or 6 laciniate sepals, reflexed oblong neither nervose nor acuminate. *Cr. tomentosa* of the South is a different sp. *Cr. pyrifolia* has corymbs and 3 styles only. I shall return on these in my monograph of the Pomaceous tribe.

502. *X. OBOVATUM* Raf. Autikon. Branches round inerme pubescent above, leaves subsessile obovate unequally serrate, base entire, end acute, lucid above, puberulent beneath; peduncles terminal pubescent commonly geminate, bracts sessile lanceolate dentate, sepals spreading ovate lanceolate acuminate nervose serrate puberulent, fruit globose semirugose—a small shrub hardly 2 feet high, flowers white blossoming in June, fruit redish rather large. Found on the summit of the Alleghany Mts. in Maryland only twice in June and October 1818. Seen no where else, probably growing also further South in the Apalachian Mts. of Virginia.

503. *NESTRONIA* Raf. Dioical. male fl. calix campanulate quadrifid, segments ovate obtuse spreading. Petals none. Stamens 4, inserted at the summit of the tube, opposite to segments but shorter, filaments linear flat, anthers oval bilocular dehiscence pubescent. Ovary totally lacking. Fem. fl. . . Fruit monosperm Drupe? *Shrub with opposite leaves, and multiflore peduncles*—singular new Genus, the name is derived from *Knestron* greek name of Daphne, since although the female plant is lacking, I have little doubt by the free calix that it belongs to the Daphnidia family and has

a free one seeded berry. It will be with *Dirca* and *Lagetta* the third American Genus of it; but by the 4 stamens and opposite leaves, it is nearest to *Struthiola*, that differs however by calix filiform, 8glands and is not dioical. Two types if both are congeneric.

504. *N. UMBELLULA* Raf. Autikon. *Anonymos* Boyken in Collins herb.—Branches hardly 4gone, leaves on short petiols, ovate rhomboidal acute at both ends, very entire and very smooth, thin membranaceous; peduncles axillary longer than petiols 3-5flowered umbellate, partial equal to calix—discovered by Dr. Boyken in Georgia, but not named, probably found also in Florida: a small shrub, branches brown leaves unequal very thin, one or two inches long, flowers small, probably somewhat yellowish, brownish when dry.

505. *NESTRONIA? UNDULATA* Raf. Physic nut or Indian olive, Bartr. trav. p. 41. leaves broad lanceolate on short petiols: entire undulate smooth, drupes solitary pedunculate yellow olive like—I refer to this new Genus, a small shrub 2 or 3 feet high found 60 years ago by Bartram in the hills of Georgia, and omitted by all our Botanists. Bartram only saw the fruit, and if I am right in my conjectures we have thus the fruit of *NESTRONIA*. Before obtaining *N. umbellula* I had considered that it was a new *Olea* or *Adelia* of Michaux; but it agrees with none while it agrees much better with my *NESTRONIA*, although still a peculiar species by narrower undulate leaves. The fruits are yellow like an olive on long slender erect peduncles, Bartram says it was used by the Indians as a charm to entice game. These two shrubs may be easily distinguished at first sight from *Nyssa*

and *Hamiltonia* by the opposite leaves. I suspect that the *Rhamnus*? *cuneatus* of Hooker flora and Origen may be a third sp. having opposite leaves it can be no *Rhamnus*! Hooker did not even see the unfolded flowers. It might be called *N. cuneata* Raf. leaves petiolate cuneate entire, smooth above, pubescent beneath, branches rusty pubescent, fl. capitate axillary peduncled bracteate.

206. *CELASTRUS ACUMINATUS* Raf. Autikon, an *C. myrtifolius*? L. ad Virg. not Jamaica! erect? branches subangular, leaves petiolate ovate or oblong, serrulate, base acute oblique, end long acuminate falcate; flowers terminal racemose paniculate peduncles ramose—discovered in 1825 in the Apalachian Mts, of Virginia, where also Linneus indicates the locality of the *C. myrtifolius*; but this Jamaica plant of Sloane differs by ovate acute leaves not acuminate nor oblique. Both *C. myrtifolius* and *bullatus* are omitted or denied by our compilers, but the last is now cultivated in Europe, and has *entire oval* leaves. Because Nuttall and Elliot have not yet found them, they are doubted; let them be sought where they grow, in the Unaka Mts. This is a tall weak shrub with thin smooth leaves larger than in *C. scandens* 3 to 5 inches long, the lower oval, the upper nearly lanceolate, flowers white size and form of *C. scandens*, raceme not simple but compound.

597. *AMORPHA PUNCTATA* Raf. Autikon. Smooth, folioles elliptical obtuse, but cuspidate, punctate beneath, base petiolate with a subulate stipule; spikes terminal curved cylindrical—a fine shrub with purple flowers, folioles small, spikes 3 or 4 inches long. Discovered by Bradbury in the upper Missouri.

508. *SORBUS RIPARIA* Raf. Antikon. Branches rugose, folioles 9 to 15 oblong sessile, base oblique entire, end acute equally mucronate serrate, odd leaf petiolate broader acuminate; corymb paniculate, berries pisiform globular. —A small tree 10 to 20 feet high, growing on the margins of Rivers, the Missouri, upper Mississippi, lower Ohio, Wabash, Illinois; but rare. The fruit is very small commonly of a saffron color with 3 seeds oval compressed inclosed in a tough shell, and thus nearly a drupe sometimes only one seed by abortion. Near *S. microcarpa*, which however has folioles acum. unequally serrate, not oblique, berries scarlet and larger. Here the folioles are 2 or 3 inches long, pale beneath, quite smooth, petioles compressed at the base. The genus *SORBUS* must be preserved, although some writers wrongly unite it to *PYRUS*: it is known at first sight by the pinnate leaves, and the calix not persistent nor crowning the fruit. It would be better to unite to it all the tristyle sp. of *Crategus* than to abolish it.

509. *TRILOPUS* Mitchell, or *HAMAMELIS* Linneus, name posterior? This G. has puzzled the Botanists, Jussieu wrongly united it to *BERBERIDES*. It has now be made the single type of the *HAMAMELIDES*; but it is so near to my *SCLERANTHIDES*, that it must probably be united thereto as a subfamily. Only 3 species were known; besides the doubtful varieties of Walter; but I have observed 6 species, and therefore shall now give their Monograph. They may be called hyemal shrubs, since they blossom late in the autumn, after the leaves have begun to fall.

510. *TR. OR H. VIRGINICA* Raf. med. fl. tab.

45. Leaves ovate and obovate obtuse repand, base obliquely cordate, smooth; flowers sessile clustered by 3 to 5, calix and fruit pubescent—the names of *Tr. or H. riparia or hyemalis*, would have been better, since it only grows on the margins of streams from New England to Carolina. It is in bloom in December and January, even when the snow is on the ground, and the fruit is ripe in the spring. Branches punctate.

511. *Tr. or H. NIGRA* Raf. Autikon. Leaves ovate and obovate, acute, repand subsinuate, base oblique obtuse not cordate, smooth and coriaceous, brown or blackish above, rusty and lucid beneath, flowers and fruits solitary.—On the Mountains Alleghany of Pensylv. and Virginia, in dry hills, shrub 6 to 10 feet high, found in bloom in October 1818. Var. *Catesbiana* figured by Catesby, leaves ovatoblong, quite acute, serrate repand, is it a sp?

512. *Tr. or H. ESTIVALIS* Raf. Autikon. Leaves obovate acute, repand erose, base oblique obtuse not cordate, smooth thin and green on both sides, flowers geminate mostly axillary—small shrub 3 to 5 feet high growing in West Kentucky and probably further west also, near streams, but blossoming in July when in full leaf: these leaves are thin and not leathery as in 510. Discovered in 1818 and 1823.

513. *Tr. or H. ROTUNDIFOLIA* Raf. Autikon *H. macrophyla* P. E. Leaves orbicular or broadly ovate, base oblique subcordate, repand sinuate obtuse, beneath reticulate roughly punctate, flowers subpedicellate 3-4—A large shrub, leaves only 3 to 4 inches long, not larger than in 510, 511, thus *macrophyla* was a bad name. First found in Alabama by Lyon, deem-

ed doubtful by Elliot, but I have received specimens from Alabama and Georgia and describe it anew. The branches are round and smooth, not punctate nor geniculate as in 509, the fruit is rounded and pubescent, not sessile as in 509.

514. Tr. or *H. DENTATA* Raf. Autikon. Leaves oboval acute with unequal acute teeth, base obliquial cordate, flowers sessile clustered—In Canada and New England, flowers polygamous and odorous as in most species, nearest to 509, but leaves smaller while shrub larger often 10 to 12 feet high. Mistaken for *H. Virginica* by many or for a variety.

515. Tr. or *H. PARVIFOLIA* Nut. R. aut. Leaves oblong obovate obtuse, undulate crenate, pubescent beneath, flowers aggregate, calix oblong colored.—Mts. Alleghany of Pennsylvania yet very different from 210, a small shrub 3 to 5 feet high with smaller leaves: yet deemed only a var. of 509 by Eaton, Beck, T. &c. They will probably deem all these 6 sp. as mere varieties also: yet they have good peculiar characters. As to those of Walter they must yet be described, since all the species are more or less polygamous and some even dioicaly so. See FOTHERGILLA for other natural affinities.

LONICERA or CAPRIFOLIUM.

I shall begin now the account of my new or rare Loniceras or Honeysuckles by those of this Genus, their main type. They are all vernal, and blossom so early that the flowers are not easily seen in their native localities.

216. L. or C. *RUPESTRIS* Raf. Autikon.

Smooth erect, leaves sessile obovate or rounded, glaucous cartilaginous retuse, floral connate cycloidal; flowers in whorls of 4 peduncles opposite biflore, berries oblong black—on the lime rocks of Kentucky and Illinois, rare, seen only in 3 localities, one at a Cave on the Elkhorn creek, 3 or 4 feet high, branches of a pale color. It blossoms in April, so early that I always missed to see the full bloom: near to *C. flavum* but different.

517. *L. ELLIPTICA* Raf. Autikon. Climbing smooth, leaves all connate elliptic obtuse glaucous beneath subundulate not reticulate, floral connate in a single ellipse; flowers subsessile small purple, base gibbous—in the Apalachian Mts. of Virginia and Carolina, seen alive in gardens. There are two varieties, 1 *Macrophylla* with long leaves 6 inches by 3, the second *Minor* small leaves 2 inches by one. Does the doubtful undescribed *C. rubrum* of fl. Louis. 248 belong here?

518. *L. OVATA* Raf. Autikon. Climbing smooth, leaves all sessile ovate acute; flowers in axillary pedicelate corymbs, corols incarnate tube slender—on the same Mts. Apalaches rare, only met once, leaves small, flowers middle size.

219. *L. RETICULATA* Raf. Autikon. Erect smooth, branches angular, leaves all connate cycloidal neither acute nor retuse, beneath white and reticulate; flowers axillary and terminal berries red—shady hills of Ohio and Mts. Wasoto of East Kentucky, very small shrub only 2 or 3 feet high, leaves ample, the lower nearly elliptical, flowers not seen, near *C. gratum*, but branches and leaves different.

520. *L. ERIENSIS* Raf. Autikon. Erect,

branches brown, villose above, leaves all sessile smooth ovate mucronate, fuscate above, pale and reticulate beneath; bracts ovate villose, flowers villose outside—on the shores of Lake Erie, flowers large white and red: near to *L. hirsuta* but this is quite hairy with obovate acum. leaves, the floral connate.

521. *L. ACUTIFOLIA* Raf. Autikon. Climbing flexuose smooth, leaves all connate subovate acute, terminal cycloidal biacute, glaucous beneath; flowers axillary and terminal pedicelate corymbose, corol small gibbose incarnate—in the Mts. Alleghany, leaves ample 3 to 4 inches long. Near to *L. parviflora*, and *L. elliptica* 516, distinct from both by acute leaves and corymbose flowers.

522. *L. DENTATA* Raf. Autikon. Erect smooth, leaves all connate oblong acute, remotely toothed, glaucous beneath, terminal united like a bell biacute; berries sessile ternate red at the bottom of the bell—near the last by acute leaves, yet different from all by toothed leaves. Flowers not seen. In the upper Alleghanies and Kiskatom Mts.

523. *L. ANGUSTIFOLIA* Raf. or *KANTEMON* do Raf. Autikon. Erect evergreen, branches round, leaves elliptic or cuneate all sessile, base acute, end obtuse, lucid above, glaucous and reticulate beneath: flowers naked verticillate, 4-6 sessile, berries oval with a marginal crown—in Florida, sent to me dry in fruit. Leaves 2 inches long, some very narrow, none connate, the entire marginal calix appears to persist on the berries. Near to *L. or K. ciliolum*, but leaves neither ciliated nor ovate nor any connate.

This pretty Genus will thus be more than

doubled by me ; we had 7 sp. *L. hirsuta*, *flava*, *parviflora*, *ciliosa*, *grata*, *douglasi* ; besides *sempervirens*, which is hardly of this Genus, and I have added 8 sp. There are also peculiar sp. in Oregon of which I will add one, thus 9 sp.

224. *C. HISPIDULUM* Lindl. bot. reg. 1761. Hispid all over, stem weak prostrate, leaves petiolate cordate ovate obtuse glaucous beneath, upper sessile ; umbel pedunc. stamens exerted—found by Douglass in N. W. America, fl. red small scentless, umbels trifid, glomerules with 2 bracts.

525. *DISTEGIA* Raf. *Lonicera* and *Xylosteon* of Authors. Flowers geminate inclosed within 2 large bracts calix entire. Corolla urceolate, base saccate swelled, limb unequally 5 fid. stam. 5 subequal style filiform declinate, stigma 2-3lobe, berry 2-3locular, at maturity subunilocular 1 or 2seeded. Habit of *Xylosteum* which differs by naked twin berries, corol not swelled, stigma entire &c. This must at any rate be a subgenus of it. Notwithstanding the restoration of *Caprifolium*, *Xylosteum*, *Diervilla* &c, these must again be revised. I think that *LONICERA* must have at last 4 subgenera, and besides 3 N. G. out of *Xylosteon*.

1. *Caprifolium*. Calix entire corolla bilabiate 1-4, tube terete.

2. *Cypheola* Raf. diff. tube gibbose or swelled below, as in *C. parviflorum*, *ellipticum*, *acutifolium*, *hispidulum* &c.

3. *Kantemon* Raf. cal. 5dentate, cor. subequal 5fid tube fusiform or clavate. *C. sempervirens*, *ciliosum*, *angustifolium* &c, which deserve to be a Genus ! the stigma is capitate, berry 3 loc. cells 2 to 4 seeds.

4. *Eunemium* Raf. cal. 5dent. cor. bilabiate 4-1, tube filiform very long, flowers geminate as in *Xylosteon*. This also might be a Genus. The type is *C. longiflorum* of Nipal, Lindl. b. reg. 1232, with leaves petiolate oblong lanceolate acute smooth, fl. axill. pedunc berries white. *Lonicera glabrata* belongs to it perhaps, although the tube is short.

Meantime my *G. DISTEGIA* has 2 types, *Lonicera ledebouri*? and *involucrata*, which is my.

526. *DISTEGIA NUTANS* Raf. *Xylosteon* involuc. Richardson, Dec. *Lonic.* do Spreng. Lindl. b. reg. 1179. Leaves petiolate ovate oblong acute, pilose beneath, fl. axil, drooping—at Hudson bay and Boreal America, flowers small yellow.

527. *XYLOSTEON PUNICEUM* Raf. *Symphorea* do. Loudon, *Lonicera* do Hooker bot. mag. 2469. Leaves cordate ovate petiolate acute concolor smooth; peduncles axillary biflore, berries distinct.—Canada, flowers red. Loudon made this a *Symphoria*, but it appears a *Xylosteon*.

528. *SYMPHORIA HETEROPHYLLA* Raf. leaves petiolate ovate and obovate, lobate or entire, obtuse and acute, upper elliptical, flowers glomerate terminal naked, berries white—from Missouri, seen alive in gardens, probably a singular deviation of *S. alba* our Snowberry. *S. rubra* is called Raccoon berry.

529. *DIERVILLA LONGIFOLIA* Raf. *Autikon*. Leaves with short petiols, oblong ovate 4 to 6 inches long, acuminate serrate, base subcordate or obliquial, beneath glaucous reticulate peduncles 2-3flore—if this is only a variety of *Diervilla canadensis*, it is like the next, a wide deviation and incipient sp. A shrub 3 to 5

feet high, with large leaves, and few small flowers, often axillary. On the Oquago Mts. of New York, north end of Alleghanies, it blossoms late in August.

530. *DIERVILLA PARVIFOLIA* Raf. stem or branches decumbent, leaves with short petiols, uncial, ovate acuminate serrulate, lower rounded, fl. terminal subsessile 1 to 3—in the Mts. Alleghany, leaves seldom over one inch long. The real *D. canadensis* is a shrub of 5 to 10 feet high with ovate leaves, and trichotome corymbs of flowers. I noticed in this sp. or deviation a very long style with a large stigma like the head of an *Amanita*, convex above, concave beneath.

531. *SAPINDUS ACUMINATA* Raf. *S. saponaria* Elliot and North Am. bot. not Lin. and Antilles! Leaves with 8 or 9 pairs of folioles alternate lanceolate acuminate oblique entire, petiols simple striate, calix with 2 larger sepals, 4 to 6 petals lanceolate base hairy—in Florida, Carolina, Alabama &c, seen alive in Bartram's garden: wrongly mistaken for the Antillian sp. which is very different by winged petiol. A tree 20 to 30 feet high, pistil trigone, 3 united styles, 3 obtuse stigmas, 3 united capsules ventricose monosperm. The *S. marginata* of Wild. and Dec. found also in Florida and Georgia and the *S. saponaria* of Mx. differs by 6 pairs of folioles not acuminate, and half winged petiols as in real *S. saponaria*. I have both our compilers call them both by that old name.

Genus VISCUM.

532. *VISCUM SEROTINUM* Raf. purpur. and verticil. of some bot. stem thick terete rugose 2-3chotome geniculate, leaves opposite evergreen subpetiolate, obovate obtuse hardly unnerve thick; flowers trifid

monoical axillary spicate, male spikes terete verticillate triandrous shorter than leaves, female spikes glomerate, berries snowy white.—Kentucky, Illinois, Missouri, &c, parasitical shrub on trees, it blossoms late in the fall and till December, flowers yellowish, almost similar to those of Genus *Osyris* (see my dissertation,) discovered 1819, indicated 1820 as new. We have in N. Amer. at least 3 sp. of *Viscum* with white berries, blended with *V. album* of Europe by Walter, Muhlenberg &c, or with *V. flavens* and *verticillatum* of South Amer. and Antilles by Pursh, Elliot &c, but quite different from all these. This is the Western sp. the berries are snowy white persistent in Winter, purplish when dry; thus perhaps *V. purpureum* of some botanists.

533. *VISCUM OCHROLEUCUM* Raf. *V. verticillatum* Elliot Nut. Tor. not *L. album* Walt. not *L. flavescens* Pursh, Beck, not Swartz—Branches terete opposite or quaternate geniculate leaves subsessile obovate obtuse trinerve often quaternate, spikes nearly equal to leaves axillary often 4nate, flowers 3-4fid, 3-4andr. berries spiked yellowish white.—From New Jersey to Florida, parasitical, stem 1 or 2 feet, flowers very small vernal April and May.

534. *VISCUM LEUCARPUM* Raf. fl. lud. 251. exclus. syn? stem articulate very branched, leaves opposite sessile oblong obtuse, flowers sessile axillary glomerate, glomerules pauciflore 2-3flore and 2-3berries white—in West Louisiana and Texas probably, distinct by the few flowers, probably enervate also.

535. *VISCUM OBLONGIFOLIUM* Raf. *V. rubrum?* auct. Branches rugose, leaves petiolate oblong or narrow elliptic, base acute, end obtuse, se-

mitrinerve, rugose, spikes very short, berries solitary oblong (red ?)—my specimen is from Florida, there also grow the *V. rubrum* of L. and Catesby, stated to have lanceolate leaves; not seen by Elliot nor any of our Authors. Mine is now better described.

536. *Viscum rugosum* Raf. *purpureum*? of some Authors! Branches rugose, leaves petiolate oboval or broad elliptic obtuse trinerve rugose; spikes very short, berries spicate ternate or geminate oboval white, but red when dry—in Delaware and Virginia, often on the *Nyssa*. The *V. purpureum* seen by few botanists is stated to have retuse avenous leaves, my specimens have 3 nerves reaching beyond the middle of the leaves.

Therefore it is evident that this Genus was quite obscure to our botanists, who had seen few species, and mistaken those seen. Neither Smith nor Elliot had seen the *V. rubrum* and *purpureum*, and only copied the errors of Linneus, who blends 2 or 3 species in *V. purpureum*, with purple and white berries, the sp of Plumier and the Antilles is probably the real species, yet Smith deems it the *V. buxifolium*. The 2 sp. of the Bahama Islands figured by Catesby appear different from all ours, and are thus. 1. *V. vulram* of Cat. 2. t. 81. leaves petiolate cuneate obtuse concave, berries red globular spiked verticillate. 2. *V. purpureum*. Cat. 2. t. 95. leaves petiolate obovate obtuse enerve, berries purple turbinate racemose opposite, peduncles swelled.

The blunders of Linneus on this Genus are egregious, see the criticism of Smith in Rees. His *V. terrestre*! is a *Lysimachia*! He has blended 2 sp. in *V. verticillatum*, the real sp.

of Jamaica is aphyllous and perhaps not of this Genus ; the other is *V. buxifolium* ? of Smith with leaves ovate obtuse trinerve, and berries safron color. Yet our American Botanists persist to this day to call 2 or 3 of our species by that name ! others unite our sp. to the *V. flavens* of Schwartz and Jamaica with ovate venose leaves and yellow berries ! none of our sp. have *ovate* leaves, they are obovate ! Such are the blunders of our best Botanists, and yet they pretend that our Botany is well known and our shrubs &c properly named . . !

537. *DIOSPYROS CILIATA* Raf. Branches divaricate pubescent, leaves ovate and obovate or elliptic shortly acuminate, smooth above, pubescent beneath when young, margin ciliated, flowers axillary, solitary or geminate subsessile—Florida, seen alive in gardens, only a shrub 5 to 6 feet high, much spreading, branches terete ash color, leaves very unequal and various on the same branch, 1 to 3 inches long, smooth beneath when old, but always ciliate, petioles short, peduncles still shorter, calyx flat 4lobed corolla ovate urceolate end 4lobe, lobes broad short, stamens 8 to 12, anthers just protruding.

538. *CEPHALANTHUS OBTUSIFOLIA* Raf. branches nearly hexagone, leaves ternate petiolate ovate elliptic obtuse not acuminate, base suboblique, beneath smooth yellow glaucous, nerves subpubescent—sent me from Missouri, also seen in West Kentucky : differs from both *C. pubescens* and *C. acuminatus* or occidentalis. The peduncles of heads has verticillated scales the corolla is slender equal to stamens, but the style is twice as long ; flowers estival white and fragrant. It forms a shrub 5 to 6 feet high growing as the others near streams.

Genus **CHRYSOBALANUS.**

This tropical Genus near to **PRUNUS** extends to Florida and we have several sp. only one was known, I shall describe 4.

539. CHRYSOB. OBLONGIFOLIUS Mx. Branchlets redish rugose, leaves subsessile oblong or subcuneate undulate, acute at both ends, lucid reticulate quite smooth, flowers terminal paniculate, dichotome and trichotome, calix white tomentose—in Florida, leaves 3 inches long, yellowish minutely reticulate on both sides, flowers small white, calix campanulate acute, stamens smooth. Not less than 3 sp. appear to have been blended by our Authors with this.

540. CHRYSOBALANUS RETUSA Raf. Branches dark purple leaves subsessile entire, oblong base acute, end obtuse retuse emarginate, reticulate and quite smooth on both sides, above coppery lucid, beneath pale yellowish less lucid—found by Nuttal in Georgia and Alabama, not named but Genus ascertained (Collins herb.) It differs from *Chr. oblongifolius* by the retuse leaves of a metallic color above, 3 to 4 inches long, over one broad, but 2 other sp. have evidently been blended by Michaux and Nuttal.

541. CHRYSOBALANUS INCANUS Raf. Var. of oblongif. Mx. leaves oblong oboval, white and wooly beneath—Florida. This must certainly be distinct from the 2 above, having no specimen I cannot describe it better.

542. CHRYSOBALANUS (Spondolobus) PRUNIFOLIUS Raf. Branches smooth, leaves petiolate ovate serrulate acute at both ends, base biglandular, both sides smooth not reticulate; flowers racemose, raceme pauciflore, drupes oblong—from Florida, in the Herbarium of

Collins, mistaken for *Bumelia*! leaves small 1 inch long, quite similar to those of *Prunus*! racemes terminal 5-6flore, no bracts, pedicels long, calix broad flat campanulate 5dentate persistent, 5 petals obovate, stamens about 15 almost monadelphous at the base, filaments subulate, pistil on a thick thorus. oblong acute prominent, style lateral incurved or flexuose, stigma obtuse. I have not seen the ripe fruit, but the young fruit is unlike any *Prunus* being oblong elongate acute like a pod one side strait. I have united this shrub with this Genus for the lateral style; but it deserves to be a peculiar subgenus by the calix, thorus, stamens &c, a connecting link with *Padus*, I propose to call it *Spondolobus* Raf. meaning *plumb-pod*.

543. *CHRY SOPHYLUM LUDOVICIANUM* Raf. fl. lud. 165. *C. glabrum* Robin not L. Spinose, leaves oblong lanceolate acute, silky beneath, flowers fasciculate axillary—in West Louisiana and Texas, only seen by Robin, mistaken for *C. glabrum* of Antilles, but this has smooth leaves. Omitted by our compilers and added here to recall it to their dull memory. A shrub 8 to 10 feet high, flowers small greenish, calyx 5parted, stigma sessile, berry globular, seeds compressed.

544. *CHRY SOPHYLUM CAINITO* var. *rotundifolium* Raf. Leaves on short petiols rounded ovate acute at both ends, veins paralel, above shining lucid brown, beneath silky lucid rusty, flowers geminate, pedicels longer than flowers, fruit oboval rounded.—South Florida, and Florida Keys, A small tree, branches smooth ashy brown, leaves alternate coriaceous thick beautiful almost round very entire 2 or 3 inches long, nearly as broad, with a single thick

nerve and many parallel veins. Flowers scattered, very small. My specimens labelled *C. cainito* appear to form another variety or deviation, perhaps it is a peculiar sp. as many have been blended in *C. cainito* with round and oval fruits.

Genus BUMELIA,

545. *BUMELIA UNDULATA* Raf. Branches inermous subopposite striate brown, leaves terminal alternate on long petiols, broad elliptic smooth minutely reticulate on both sides, base acute, end obtuse, margin undulate entire; flowers scattered fasciculate shorter than pedicels—a small tree from South Florida, labelled *B. salicifolia* in Collins Herbal, but quite distinct from the Bahama and Antillian sp. with narrow acuminate leaves. This has leaves 2 or 3 inches long and $1\frac{1}{2}$ or 2 broad, quite obtuse and even somewhat retuse at the end, petiols 1 or 2 inches long: flowers not axillary scattered below the leaves 2 to 5 together, seldom solitary, calix smooth, sepals ovate acute, fruit oval style persistent.

546. *BUMELIA ARACHNOIDEA* Raf. Arborescent, inermous? branchlets dark purple subrugose, leaves petiolate fasciculate cuneate oblong entire obtuse, smooth and reticulate above, beneath and petiols hairy arachnoidal, flowers on short pedicels fasciculate rufous hairy—in Arkansas and Texas, large tree 40 to 50 feet high, leaves about 4 inches long and one broad, not lucid, dull on both sides, minutely netted nerves above, tomentose like spider webs beneath, very acute at base and very obtuse at end. Flowers very small and short, sepals of calix ovate obtuse. The *B. oblongifolia* of Nuttall is akin but differs by being a small tree

15 to 20 feet high, leaves smooth (so says Nutt although Eaton calls them hairy beneath) not so cuneate, branches thorny, flowers subsessile &c.

547. *BUMELIA DENTICULATA* Raf. shrubby inermous? branchlets smooth rugose, leaves petiolate thin, broad oval elliptic, base acute, end subacuminate, margin remotely denticulate smooth on both sides, flowers solitary on long erect filiform pedicels, calix smooth, sepals round—from Florida, leaves 2 or 3 inches long with a few remote obtuse teeth on the sides, texture very thin, with veins rather than nerves slightly reticulate, pedicels over one inch long, stiff although filiform, flowers pretty large smooth. A very distinct species.

548. *BUMELIA? SERRULATA* Raf. shrubby inermous, branchlets cinereous with white dots leaves subopposite petiolate smooth, obovate elliptical acute at both ends serrulate glaucescent beneath minutely veined reticulate with some scattered hairs—from Apalachian Mts. of Alabama small shrub, leaves small pale green, nearly glaucous beneath. Collected by Lyons, my specimen of Collins herbal has no flowers, but is labelled a new *Bumelia*. We have thus at least 10 sp. of this Genus with the 6 already known, and I have nearly all in my Herbarium; but one requires correction, 2 or 3 sp. being perhaps blended under *B. lanuginosa*. My specimens collected by Ware in Florida have leaves elliptic obtuse or acute, hairy rusty beneath like the branches, and flowers thickly glomerate rufous hairy, is it a peculiar sp. *B. rufa?* Raf. while the *B. lanuginosa* of Elliot and Authors, has leaves ovate lanceolate tomentose beneath, a third var. is

the var. *sericea* or *B. chrysophylloides* of fl. Louis. with similar leaves, but silky silvery and gilded beneath.

549. Genus ANTHELIS.

The Genus *CISTUS* of Linneus was a medley of 150 heterogenous species, the modern botanists in restoring *HELIANTHEMUM* of Tournefort overlooked the perfect identity with *HELIANTHUS*! both meaning Sun flower. To avoid this equivocal name I changed it in 1812 in my *Chloris Etnensis* to *ANTHELIS* being a transposition (flower of the sun) this correction is indispensable. Of this Genus 5 sp. have been described as North American, and with 5 others from Mexico and Brazil form a peculiar group or subgenus quite American; Decandole calls this group *Lecheoides* owing to the similarity with *Lechea*, but if it is to become a Genus in future this derivation will not do. I am going to add several new sp. thereto and thus venture to call it *HORANTHES* flowers of an hour.

S. G. HORANTHES, sepals 5, external 2 narrow, internal 3 margin scariose, petals 5 yellow, stamens few 12 to 20, stigma capitate large sessile or subsessile, capsule glabrous uniloc, 3 valve—small suffruticose plants, leaves opposite below, no stipules, flowers evanescent or petals fugacious. The *H. tripetala* of Mexico is probably a *Lechea*! all our sp. are estival.

550 ANTHELIS (HORANTHES) PODANISIA Raf. erect pulverulent pubescent, stem virgate simple, leaves adpressed linear cuneate acute margin reflexed; flowers in axillary fascicles, or racemes, pedicels unequal, one terminal much longer, calix with 3 oval sepals, 2 linear equal, capsule oval equal to calix—on the Red River

in Arkanzas Louisiana and Texas, stem pedal base suffruticose, leaves one inch long narrow, flowers small, calix cinereous pubescent.

551. *ANTHELIS* (Horanthes) *ARENARIA* Raf. many procumbent stems nearly smooth. leaves linear acute sometimes ciliate, pedicels axillary uniflore equal to leaves, 3 sepals membranaceous rufous smooth trinerve ovate acute, 2 linear subciliate—in sands of Pine barrens in South New Jersey and Florida, first discovered by Kin in 1801. Root large deep, many short diffuse stems, leaves small, flowers rather large.

MONOGRAPH of *CELTIS*.

I mean to give a complete account of the N. American sp. of this Genus, increased to 15 kinds whereof 9 are trees and 6 are only shrubs. Linneus had only one, Lamark and others increased it to 3 or 4, our latest compilers have only 4 sp. although I had added 3 others as early as 1817; but this Genus was little attended to, the species being very similar in habit have usually been blended, even when seen, and often reduced by the leaves rather than flowers. They are known indiscriminately by the vulgar names of Nettle tree, Beaver wood, Hackberry, Dogcherry, Cherry elm, Hoopash, &c; they bear vernal blossoms, and edible berries, leaves distichal alternate, the wood is hard and valuable; but they are rather uncommon in our forests except two kinds.

552. *CELTIS CANINA* Raf. Am. M. M. 1817 Decads 6. Tree with smooth bark, branchlets smooth angular dotted, leaves ovate acuminate, unequally uncinatate serrate trinervate, base acute entire obliquial unequal, smooth on both sides but wrinkled above, and axils of nerves pubescent beneath, fruit red globular

solitary axillary, pedicels longer than petiols—a small tree 15 to 25 feet high, discovered 1816 in the State of New York, near the Mattawan Mts. it blossoms in April and May, the branches are spreading, covered with glandular dots. Torrey insisted that this was the *C. occidentalis* of Linneus, and yet believes it perhaps, therefore I will give the contrasted account of that sp. from my specimens, confirmed by the ample descriptions of Lamark, Smith and Elliot.

553. *CELTIS OCCIDENTALIS* L. and Authors. *C. URTICIFOLIA* Raf. a better name—tree, bark rimose, branchlets pubescent angular not dotted, leaves ovate acuminate subequally uncinately serrate trinervate, base acute entire oblique unequal, young leaves villose, old leaves smooth even above, beneath quite pubescent, petiols pubescent, fruit purple globular solitary axillary, on pedicels subequal or shorter than petiols.—A large tree 30 to 70 feet high, spread thinly from New England to Carolina, flowering in March and April.—Thus it differs from the last by the bark branches, being larger, quite pubescent, leaves also larger 3 to 5 inches long, fruit sweeter dark purple, Elliot says the sterile flowers are frequently ternate. The *C. australis* of Europe hardly differs except by rougher leaves and black fruit. The *C. tenuifolia*, *pumila*, *alba* &c had all been deemed varieties of this by turns, and even Nuttall deems the *C. cordata* as such! they might as well unite all the sp. of Asia and the Antilles into one!

554. *CELTIS ALBA* Raf. fl. lud. 68. Var. *integrifolia* of Amer. Authors, not the *C. integrif.* of Lamark, african sp.—Tree with smooth bark

branchlets tomentose, smooth when older subangular dotted, leaves broadly lanceolate entire gradually acute, base acute obliquial unequal trinervate, quite smooth on both sides, glaucous above, nerves reticulate beneath, fruits red small globular solitary or ternate, axillary on pedicels equal to petiols—a very distinct species, well described and named by me as early as 1817, neglected by our compilers; I have specimens collected in Arkansas by Nuttall as a *N. sp.* or mistaken for the *C. integrifolia* of Senegal, which is totally unlike having round and rough leaves &c. It grows in Missouri, Arkansas, Louisiana and Texas. Fine shady tree 40 feet high, bark whitish and scaly, cooling and anodyne. Leaves 2 or 3 inches long, one wide, of a whitish color, being glaucous above, while beneath less so, flowers small green; anthers opening as in *Laurus* says Robin, 2 hairy stigmas. Berries small red sweet. Blossoms in March.

555. *CELTIS FUSCATA*. Raf. *C. longifolia* Raf. fl. tex. 9. Tree, branchlets smooth subangular verrucose, leaves smooth oblong lanceolate acuminate trinervate, fuscate base acute obliquial unequal, margin equally serrate, beneath reticulate, pedicels equal to petiols—a small tree from Florida, Texas and also the Island of Cuba, where collected by Jalambic: quite distinct from the rough leaved sp. of the Antilles with broad or cordate leaves. Some of the leaves are broadly lanceolate, others quite narrow, commonly 2 inches long, their color is peculiar brownish, dark above, yellowish beneath. My specimens have no fruit. Found anonymous in Collins Herbarium. Var. *texensis* was my *C. longifolia* of 1833 only differ-

ence leaves base truncate, roughish above.

556. *CELTIS SALICIFOLIA* Raf. Tree, branchlets terete pilose with white dots, leaves oblong elongate narrow subacuminate sharply serrate, base oblique acute trinervate, petioles and nerves pubescent—in Arkansas and Louisiana, a small tree 20 feet high, leaves 2 to 4 inches long similar to some Willows but quite oblique, very different from all the narrow leaved kinds, nearer to *C. occidentalis*, but very different leaves. Is it a deviation of *C. fuscata*? chief difference in terete pilose branches, nerves pubescent &c.

557. *CELTIS LEVIGATA* W. Loud. Leaves unequally cordate oblique acuminate nearly entire, smooth on both sides—in Louisiana, small tree 20 feet high. I have not seen it, it was described in Wildenow Enumeration, I copy the notice from Loudun Cyclop. of plants. It appears different from all the cordate leaved kinds by the smooth leaves, and from my *morifolia* and *patula* by oblique acuminate leaves.

558. *CELTIS MORIFOLIA* Raf. *C. cordata* of some botanists?—Tree, branchlets reddish hirsute angular or striate, leaves ovate oblong serrate acute or acuminate, base subcordate or truncate, slightly oblique, scabrous above, beneath smooth pale reticulate, nerves yellow hirsute, petioles pubescent, pedicels longer than petioles—this is one of the 3 sp. blended and called Hackberry in the Western States. This is a tree 20 to 40 feet high, the branches have neither warts nor dots. Leaves 3 to 5 inches long, 1 or 2 wide, becoming quite smooth beneath when old, but always rough above hardly trinervate, but nerves regular and reticulate. Found in Illinois, Kentucky &c, if I remember

right the berries are blackish and ovate; but my specimens have no fruit. It has evidently been often mistaken for the next, which has shorter thicker leaves more acuminate, more cordate and more obliquial, quite pubescent beneath; it is nearer to *C. micranthes* of Antilles differing chiefly by larger serratures, pubescent branches, petioles &c.

549. *CELTIS CRASSIFOLIA* Lamark and many Authors, *C. cordata* Persoon and others—tree, branches terete rough, leaves broadly ovate acuminate, unequally serrate, base cordate obliquial, thick or subcoriaceous, rough on both sides, peduncles mostly biflore—a small tree 15 to 40 feet high, with large dark thick leaves quite rough, common from West Pennsylvania to Missouri and Kentucky, blossoms in May. Berries black large sweet, called Hackberries or by corruption Hagberries, Hogberries.

560. *CELTIS RETICULATA* Torrey, Eaton. Leaves broad cordate pubescent subcoriaceous, subentire, subobtuse, base unequal obliquial, papillose scabrose above, reticulate prominent nerves beneath, peduncles uniflore—in the Western parts of Missouri and Arkansas extending probably to the Oregon Mts. found by James described by Torrey; I have not seen it and only copy his account to show that it differs no more from *C. crassifolia* than my *C. morifolia*, all 3 have cordate leaves and reticulate nerves, whence the name is not very proper. Is it a tree or a shrub? compare *C. patula*.

561. *CELTIS MARITIMA* Raf. 1817. Decads 7. Shrubby, branchlets terete tortuose pubescent, leaves ovate acuminate trinerve rough on both sides with large equal serratures, base

broad nearly cordate obliquial, petiols and nerves pubescent, pedicels subequal to petiols, a small crooked shrub 3 or 4 feet high growing on the downs of the sea shores from Long Island to Chesapeak. It blossoms in May, the branches are cinereous and slightly dotted, leaves small uncial. Very near to the next, but distinct by locality and acuminate rough leaves.

562. *CELTIS PUMILA* Raf. *C. occid* var. *pumila* Mg. and some others, but not Pursh nor his copists.—Shrubby, procumbent, branchlets slender terete subtomentose, leaves thin ovate acute with large equal serratures, base truncate hardly obliquial trinervate both sides nearly smooth, petiols and nerves hardly pubescent—in the Alleghany Mts. from Pennsylvania to Virginia. A small low shrub only 2 feet high or long. Leaves hardly over one inch, hardly acuminate rather acute, very thin and green, with very large teeth. This is marked in Collins Herb. as the real *pumila* var. of Muhlenberg, but it appears that all our 6 shrubby sp. must have been blended under this name; I shall now distinguish them properly although the synonyms are difficult to fix, owing to all copying Pursh rather than describe what they saw. The large teeth and truncate base will distinguish this from all others besides the procumbent stem.

563. *CELTIS TENUIFOLIA* Raf. (or *parvifolia*) *C. pumila* Pursh, T. B. &c. *C. occid.* var. *tenuif.* Lam. Pers. Nuttal? &c.—shrubby erect branches divaricate, branchlets angular smooth leaves uniform ovate acuminate, serrulate in the middle, base acute obliquial unequal entire trinervate, both sides smooth, pedicels axillary

uniflore longer than petiols, fruits round oboval brown—a shrub 3 to 5 feet high, erect with spreading branches, found by myself in the hills of Maryland, blossoming in May, said to grow also in the Mts. of Virginia and in Louisiana, easily known by the few small teeth, leaves 1 or 2 inches long rather thin.

564. *CELTIS HETEROPHYLLA* Raf. shrubby, branchlets smooth terete rugose, leaves multiform, ovate or cordate, oblong or lanceolate, base hardly oblique rounded or cordate, end acute or acuminate, margin entire or with a few teeth, but all smooth thin with nerves reticulate beneath, pedicels axillary uniflore longer than petiols, young fruits ovate—sent me from Alabama, a very singular species offering all kinds of leaves on the same small branches (1 or 2 inches long) yet unlike any of the other shrubby kinds. Is it the *C. pumila* found by short and Riddell in Kentucky?

565. *CELTIS PATULA* Raf. shrubby diffuse, branches divaricate, branchlets angular smooth leaves uniform cordate acute, entire or serrulate in the middle, rough above, beneath smooth reticulate, base not oblique, petiols and pedicels very short—from Florida, humble shrub, branches quite divergent, sometimes reflexed, leaves over one inch long and broad, pale above as in *C. alba*. Near to *C. reticulata*, which differs chiefly by leaves pubescent oblique obtuse.

566. *CELTIS FLORIDANA* Raf. shrubby, branchlets angular pubescent above, petiols pubescent very short, leaves broad ovate oblique acute serrulate in the middle above rough rugose, beneath reticulate by grey pubescent nerves, pedicels short but longer than petiols, fruit depres-

sed?—Florida and Alabama in the hills, leaves uncial, base and end quite entire, middle teeth small but close subequal.

Genus ULMUS.

Without giving a complete monograph of all our Elms, I will try to rectify and improve this Genus by adding 5 to those already known or admitted. There are several overlooked sp. of it, since Thomas has quite lately described the *U. racemosa* from New York: the others known are *U. americana*, *nemoralis*, *fulva* and *alata*, to which I shall add *U. longifolia*, *obovata*, *alba*, *dentata* and *dimidiata*; thus we know already 10 N. Amer. Sp. and there are more perhaps, those of Origen are not yet described.

567. *ULMUS LONGIFOLIA* Raf. shrubby, branchlets slender smooth striated, leaves on short petiols, smooth on both sides, thin, oblong elongate, base subcordate hardly obliquial, end acuminate, margin duplicate serrate—Alabama and Tennessee, near to *U. alata*, but branches not winged and leaves longer subcordate. A shrub 8 to 10 feet high, leaves 3 to 4 inches long about one wide.

568. *ULMUS OBOVATA* Raf. Tree, branches patent, branchlets terete smooth rugose, leaves ample on short petiols obovate acuminate, base obtuse obliquial, margin duplicate serrate, nearly smooth above, villose beneath—in Kentucky and Illinois, a tree 30 to 40 feet high, with large leaves 4 to 6 inches long, 3 to 4 wide, near to the two next which differ by oblong leaves and white hanging branches, or ovate rough leaves &c.

569. *ULMUS ALBA* Raf. fl. lud. 387. U. Amer. Var. *pendula* of Authors—Tree with hanging

branches, bark whitish, leaves oblong, base acute obliqual, duplicate dentate, roughish and lucid above, villose beneath—in Louisiana and other States, 50 to 60 feet high, long flexible branches. As this with the last and next are often blended under the vulgar name of White Elm, I must add what I consider as the real *U. Americana*.

570. *ULMUS AMERICANA* L. Authors: (sessilis Raf. better name.) Tree, branches divar-gent, branchlets terete smooth rugose, leaves subsessile ovate acuminate, duplicate serrate, base very obliqual subcordate, above rough, beneath soft hardly pubescent—chiefly in the Alleghany mts. large tree 60 to 80 feet high, leaves 3 to 4 inches long 2 or 3 broad. Thus quite distinct from both the preceding.

571. *ULMUS DENTATA* Raf. Tree, branchlets terete smooth, leaves ample and thin, on long petiols, obovate, base acute entire, not obliqual, large sharp teeth above, end subacuminate, smooth on both sides, fruits fasciculate peduncled oblong bifid fimbriate on the sides—a fine new Elm, sent me from Alabama as *U. fulva*, but totally unlike, much nearer to *U. nemoralis*? which differs by oblong leaves and sessile flowers. Leaves very large 6 to 7 inches long, 3 to 4 broad, petiols over one inch longer than in any other sp. the large subequal teeth are only in the upper half, fascicles of flowers multiflore, pedicels filiform, calix campanulate, stamens exserted, pistil cuneate oblong bifid by the 2 styles. It is called the yellow Elm.

572. *ULMUS DIMIDIATA* Raf. shrubby, branchlets smooth angular, leaves on very short petiols, quite smooth biforme, some smaller ovate

acute, some larger oblong acuminate dimidiate, all equally serrate, base very obliquial, often one side decurrent the other reduced in size or dimidiate.—In Florida and Georgia, shrub 8 to 12 feet high, leaves pale subcoriaceous, 1 or 2 inches long, in the narrow leaves the base of one side is removed upwards of the petiol and that side is much reduced in size whence the name: unlike any other sp. very singular and curious, fruit not seen. The fine *U. alata* is alone somewhat akin in size of shrub and leaves I have found that fine sp. in Kentucky and have it also from Tennessee and Arkansas. The *U. pinguis* or fat Elm of Louisiana must be compared and distinguished if different from both. The *U. pumila* of Walter is said to be the *U. alata*.

This fine and useful Genus was thus like *Celtis* in great disorder, Linneus united six European sp. in his *U. campestris*! and we have nearly as many in our White Elms! It is now supposed that *U. nemoralis* is the *Planera aquatica* and also *Rhamnus carpinifolia*! being put into 3 Genera! and although Sir James Smith doubts the fact, he acknowledges having seen only one kind. I have not yet obtained the *Planera* and cannot clear the subject; but all our botanists distinguish it from *U. nemoralis*, altho' they cannot show distinct specimens of both, if two they are both called Water Elm. Elliot omits the *U. nemoralis*, but describes twice the *Planera* in pentandria and polygamia! I hope my remarks and new sp. will make this Genus better known. *Abelicea* or *Planera* will only be perhaps a subgenus of *Ulmus*, merely distinguished by polygamy and capsule

swelled obliquial reticulate or squamose. 3 sp. *Abelicea cretica*, *sibirica*, and *aquatica* our own.

573. **PLEUROSTENA** Raf. fl. tel. 413. Calix rhomboidal 5fid unequal. Stamens 5 subequal, stigmas 3 sessile. Seed conical longer than calix, unequal trigone, one side narrower. *Flowers axillary polygamous*. One of the 20 Genera blended in *Polygonum*, revised by me in fl. tel. The type of this is a small western shrub. The name means narrow side.

574. **PLEUROSTENA SEROTINA** Raf. Polyg. do Raf. An. nat. 93. Suffruticose, stem striate much branched, branches angular virgate, leaves nearly sessile ovatoblong acute smooth, sheaths split lacerated, flowers axillary fasciculate—discovered and published in 1820, a small shrub 2 or 3 feet high woody only at the base, quite autumnal blossoming late in October, growing in fields and glades in Kentucky. Leaves quite small, flowers green 2 to 5 together on short peduncles, often polygamous by the abortion of stamens. Different from *Stopinaca* fl. tel. 405 or *Polygonella* of Mx. which I have also.

575. **SPERMAULAXEN** Raf. fl. tel. 416. Monoical, male fl. campan. 4-5fid, segments subequal obtuse colorate. Stam 4-5 very short, female fl. similar larger more unequal, segments erect obovate, stigmas 2-3 sessile. Seed pyramidal double of calix trigone, base concrete, one side concave canaliculate. *Shrubby fl. spiked*—another very distinct G. of same tribe akin to the last, to which perhaps belong also the exotic sp. blended as *Polyg. ochreatum*

and grandiflorum. The name applies to the sulcate seed.

576. *SPERMAULAXEN DICHOTOMUS* Raf. stem shrubby dichotome sulcate, leaves petiolate oblong lanceol. acute smooth, margins rough, sheaths obsolete, spikes filiform, flowers remote some are peduncled—Florida, found without name in Col. herb. flowers small purplish male and female on same spike, no tubular sheaths but instead a small subulate deciduous stipule in some leaves and flowers.

577. *TOXYLON* Raf. 1817 in Mus. Nat. Sc. misprinted *Ioxylon* (an I for a T) corrected in Med. flora Vol. 2 page 268. *MACLURA* of Nuttall 1818 posterior name, and a Genus of shells was since called after Maclure who was no botanist! *MORUS* or *BRUSSONETIA TINCTORIA*! of Sprengel Kunth and Torrey! not of Linneus, quite a different tree . . . I was the FIRST to describe this Genus of trees and give it a better name than Nuttall. His name however was adopted by some botanists, while others blundered so far as to blend it with the tropical *Morus tinctoria* of Linneus, I corrected this mistake in 1830 in my medical flora, Nuttall has also corrected it in 1834 in his plants of Wyeth; but without mentioning my previous name!—I gave a long account and history of it in 1817 to which I refer Amer. Monthly Mag. Vol. 2 p. 118, and will only recapitulate the main characters here: adding the real *M. tinctoria* (to evince the difference) which forms the Genus *Fusticus*.

Characters of *TOXYLUS* Raf. flowers dioical in catkins, male fl. calix 5parted, 5 stamens, female fl. in globular fleshy catkins, calix immersed pentagonal concrete, Ovary oboval

simple deciduous filiform villose stigma simple fruct a fleshy syncarpe or concrete berry by coalescent berries verrucose tessellated as in *Artocarpus*, forming many cells at the periphery, each with one seed obovate. *Spinose tree with alternate distichal leaves, fruits large axillary.*—Thus intermediate between *Artocarpus* and *Fusticus*. My name means *Bow-wood* (*Ioxilon* would have meant arrow-wood) one of its name.

578. *TOXYLON MACLURA* Raf. *T. pomiferum* Raf. 1817. *Maclura aurantiaca* Nuttall 1818, Eaton. *Brouss.tinctoria* Spr. K. Torrey! Leaves smooth lucid ovate acuminate petiolate entire, a recurved spine near their base, fruits orange like, axillary subsessile drooping—in Arkansas, Texas and upper Missouri, a small tree 20 to 30 feet high, branches spreading, leaves 2 to 4 inches long, petiol about one inch, fruits size and shape of an orange, nearly same color, but structure like the bread fruit or pine apple, containing a sweet emylaceous milk. Wood yellow tough and heavy, used to make excellent bows, bark affording a fine flax. Tree easily raised from cuttings and layers, forming excellent hedges. Called *Ayac* by the Indians, also *Bow-wood*, yellow wood, stinking wood, *Osage apple*.—I made two oversights in my first account of this valuable tree in 1817, calling the leaves serrate and wood used for arrows. Seen alive in many gardens with flowers and fruits. Nuttall calls the nerves puberulent beneath, they are only so when young, the flowers and styles are yellow.

579. *FUSTICUS* Raf. *Fustic* tree differing from *Morus* or *Mulberry* by female Catkins globular, flowers distinct, calix scarious 4par-

tite, sepals unequal obovate obtuse, ovary obovate compressed, a single style terminal smooth filiform flexuose, a single stigma. Fruit a globular compound berry or syncarpe by baccate calix as in *Morus*, concrete at the base but distinct at the end, seeds compressed. *Trees distichal serrate leaves, fruits axillary pendulous*—several blended species. If the good name of *Fusticus* does not appear classical enough, I propose for substitute *SUKAMINEA* a name of *Dioskorides* for the Mulberry. This *G.* is nearer *Broussonetia* than *Morus* and *Toxylon*. The first only differs by fem. calix tubular 3-4dentate, style lateral, seed clavate: the *Morus* differs from all 3 by the double styles and stigmas, with the oblong fruits. My *G. Calostima* fl. tel. 589 which was the *Urtica baccata* of L. is akin to all these, a connecting link with *Basella*, it differs by the many radiated stigmas and racemose fruits not forming a syncarpe, All are deemed to belong to the tribe of *Urticoides* or *Nettles*, forming a peculiar group *MORIDES* by baccate seeds. Sir J. Smith regreted that the blended *Fustic* trees had not been well distinguished, I shall try to distinguish 4 of them.

580. *FUSTICUS GLABRA* Raf. *Broussonetia tinctoria* Jalambic in Collins herb. Branches terete inerme yellowish punctate of white, petiols very short, leaves quite smooth ovatooblong repand or serrate in the middle only, base oblique subcordate, end acuminate elongate, female catkins on short peduncles—in South Florida and Cuba. It is on this sp. that I have framed the Generic character. Leaves 2 or 3 inches long without spines, catkins small not one fourth of *Toxylon*. It is probably this sp.

that is meant by some writers, but I cannot ascertain the synonyms; yet I can vouch that it is quite unlike my *Toxylon*, having seen both. The flowers are pale yellow, styles of same color, fruits not seen.

581. *FUSTICUS VERA* (OR *TINCTORIA*) Raf. *Morus tinctoria* Lin. syst. nat. Mant. not sp. pl. Miller, Brown, Sloan, Smith &c. Bark yellow leaves oblong acute entire rough, base obliquial cordate, no spines—in Central America, Yucatan, Jamaica &c the real Fustic of dyers, a large tree 60 feet high, fruits sweet eatable size of a nutmeg.

582. *FUSTICUS XANTHOXYLON* Raf. *Morus do* Lin. Syst. nat. et Mant. 495. Smith, *Morus tinctoria* Lin. sp. pl. Poiret, Jaq. t. 247. Pluk. phyt. t. 239. Bark grey, leaves ovatoblong acute serrate nearly smooth, base obliquial, spines axillary half uncial equal to petiols.—From Yucatan to Bahama, it is the Bastard Fustic a smaller tree 40 feet high, it was the original *M. tinctoria* of L. but he since described the real one above: Lamark again blends them; but they are quite distinct botanically and economically as proved by Smith, the wood being less valuable as a dye. Perhaps found in Florida.

583. *FUSTICUS TATAIBA* Raf. *M. tinctoria* L. Sm. Poiret &c. *Tatai-iba* Maregrave hist. braz. 119 fig! Bark grey, leaves petiolate ovate lanceol. acumin. serrate or repand smooth, base acute not obliquial nor cordate, no spines, fruits subsessile—Brazil, a very distinct sp. figured 150 years ago. A very large tree, with leaves like the Beech tree. Fruit pretty large sweetly acid eaten with wine and sugar, the flowers are pale, the styles brown. I have verified the

figure—the Quechue of Orinoco mentioned by Caulin p. 15. is probably another Fustic, the fruit is green and sweet falling as soon as ripe.

584. *BROUSSONETIA PAPIRIFERA* Duhamel, W. &c *Papyria* of Lamark, *Morus papyrifera* L. Sm. &c. A well known useful tree native of Japan and Polynesia, now introduced in the open grounds of Europe and America, quite common in our gardens where it bears the winter pretty well, altho' injured sometimes by frost. We have only the male trees.

Genus MORUS.

585. *MORUS ALBA* L. &c. A well known tree, now widely spreading with us, almost wild in some localities. White Mulberry. This is said to be constantly monoical, but the other sp. are often dioical and polygamous.

586. *MORUS NIGRA* L. &c. Black Mulberry, also cultivated for the fruit.—The best Monograph of this Genus are those of Lamark and Smith, including the Fustic trees however; but Lamark has a new American sp. *M. canadensis*, and Willdenow another *M. Scabra*, I can add 4 others besides the *M. multicaulis*. Eaton has only 3! Nuttall admits the *M. scabra*. I have 9 whereof 7 seen alive and one dry.

587. *MORUS RUBRA* L. our well known Red Mulberry found from Canada to Louisiana. It has some Var. 1 *pallida* fruits pale, 2 *heterophylla* with all the leaves unlike. Often dioical like all our American kinds. It is even stated that the same trees often vary each year in their sexes?

588. *MORUS RIPARIA* Raf. distinct from *M. rubra* by long petiols, smooth leaves ovate deeply cordate, seldom lobed lateral, quite smooth and thin crenate serrate, acute not acuminate,

and not obliquial at base. Found in the Alleghany mts. on the banks of the Susquehanah, leaves 3 to 5 inches long nearly trinerve at base nerves yellow quite smooth, berries dark red, called the wild black Mulberry, or Water Mulberry. A pretty tree growing even among rocks.

589. *MORUS CANADENSIS* Lamark. leaves ovate obliquial base rounded not cordate, serrate nearly smooth long acuminate—in Canada Maine and the Alleghanies, called the Rock Mulberry, fruits not seen.

590. *MORUS PARVIFOLIA* Raf. Monoical, petiols long and slender, leaves small and smooth, ovate acute or obtuse not lobate, equally subcrenate, base truncate often obliquial, fruits short on very short peduncles.—Mts. Alleghanies and Apalachian, called the Indian Mulberry, said to have been cultivated by the Indians, often mistaken for the White Mulberry, the fruits being very small ovatoblong of a flesh color and sweet. Leaves only 1 or 2 inches long, not so thin as in *M. riparia*, petiols over one inch. Male catkins on same branches, with longer peduncles, segments of calix rounded. Styles very short.

591. *MORUS SCABRA* W. enum. Leaves ample thin trilobed, base cordate, rough on both sides, pale beneath, serrate, large teeth interjected in the sinusses, fruits terete black acid—in Louisiana called the black Indian Mulberry, communicated to me by Dr. Mease. Leaves 5 to 8 inches long and wide, lobes acute not acuminate, lateral lobes oblong, terminal oval or narrowest at base.

592. *MORUS TOMENTOSA* Raf. fl. lud. 379. Leaves broadly cordate acuminate dentate,

above lucid rough, beneath tomentose, spikes often monoical, fruits oblong white—in Louisiana, well noticed by me in 1817 in my flora of Louisiana where detected by Robin. It is the White Mulberry of the S. W. often mentioned by the old travellers. A large handsome tree, bark white and smooth, it blossoms in March, male catkins terete and loose, female shorter and thicker, but they are generally united, the male flowers being then at the base.

593. *MORUS MULTICAULIS* Raf. and of Gardeners, not introduced yet into our books, nor do I find any botanical account of it, even in Loudun Cycl. A small shrub with many stems and ample leaves, cordate rounded not oblique, nor lobed, crenate, acute, somewhat rough, but thin. I have seen leaves one foot long and wide. Native of China and the Philipines, lately introduced and much esteemed as the most productive for the breeding of silk worms and easy gathering of leaves. But all our Mulberries are eaten by the silk worm, and the *M. rubra* produces a fine strong silk.—As the subject of silk culture now begins to attract much attention, I hope this account of all our Mulberries will be acceptable.

N. O. *EMPETRIDIA* Raf. 1815. *EMPETREAE* Nut. 1818, Don 1826, Torrey 1835!

I first noticed this order in my Analysis of Nature 1815, therefore Torrey is wrong to ascribe the discrimination of it to Nuttall 3 years after, who had besides deemed it only a section of Conifera! while I had perhaps properly united it to Phytolacca! and if the berry is multi-ocular they are quite akin notwithstanding the remote habit. I have since in my Flora tellur.

633 revised it and separated by the unilocular berry, reducing to *SARCOCIDIA* the Genera *Phytolaca*, *Raxamaris*, *Schefferia* &c, and to *RIVINIDIA* the pretended *Chenopodea* with a berry.—The *EMPETRIDES* are more akin to those than to *Euphorbides* and *Celastrides*, and are quite unlike to *Conifera*. The genera belonging thereto are *Grubbia*, *Coilosperma*, *Batis*, *Ceratiola* &c besides the types *Empetrum* and *Colema* . . . but the Genera *Skimmia*, *Nandina*, *Melicytus* &c are very near also. The whole requires a careful revision.

594. *COLEMA* Don 1826. *Euleucum* Raf. 1886 fl. tel. Dioical, calix 5-6parted, stamens 3 to 4, style 3-4parted, berry 3-4locular, 3-4sperm. *Evergreen shrubs, habit of heaths, flowers terminal and axillary glomerate*—This had been based on the *Empetrum album* of L. but our sp. may be of quite a different Genus, the real *Colema* having the ternary part constant, no style but 3 stigma, a berry nearly monolocular when ripe. Therefore it must form the subgenus *Euleuca*, and our sp. with heterogonal parts and stamens, a style, and probably a 4locular berry must form a subgenus *ENDAMMIA* Raf. if not a Genus, meaning *in sands*.

595. *COLEMA ARENARIA* Raf. or *Endammia ericoides* Raf. *Empetrum conradi*, Torrey 1835. Cespitose procumbent smooth. leaves subverticillate and alternate, narrow linear acute glandular, margin revolute, flowers glomerate and capitate—in the sandy tracts among the Pine woods of New Jersey, first noticed by Kin in 1800, who gave it to me as an American heath in 1802, found by me in 1804 near Pemberton, long before Conrad, and twice again in 1833 at

Cedar bridge; but always without flowers and seeds. It must blossom in winter or very seldom. Torrey only saw the flowers dry and in a garden and omits to state the time, his account is however very good. It is a small evergreen shrub 5 to 10 inches high, much branched and growing in patches like the *Hudsonia*.

596. *CERATIOLOA ERICOIDES* Mx. and all botanists, Hooker bot. mag. 2758. From Carolina to Florida, well described by Michaux, Elliot, Hooker &c. I have many specimens, in which the leaves are mostly fallen as in the dry Heaths.

597. *EMPETRUM PURPUREUM* Raf. *E. nigrum* Mx. and all our Amer. botanists, not of Lin. and European bot. *E. rubrum* Lapilaye fl.—Procumbent smooth, leaves scattered crowded, lower patent, upper imbricate, oblong linear sessile uninerve obtuse flat on both sides, thickish, berries purple, sessile equal to the leaves and costate—in Canada, Labrador, Newfoundland, White Mountains, Lake Superior, near the rocky shores. Michaux who first noticed this blended it with the boreal sp. of Europe, and has been followed by all our subservient botanists except Lapilaye who has blended it with *E. rubrum* of Austral America in his Newfoundland Flora. My specimen is from Labrador and has red berries strikingly like those of *Phytolaea*! Those of our Botanists who saw the berries are few, they mostly copy Michaux! is there a sp. in boreal America with black berries? My sp. is perfectly distinct, the branches are terete smooth but sulcate among the leaves, these are only 2 or 3 lines long, with a single nerve beneath not at all revolute and hardly any verticillate; the flowers and berries

are solitary near the end, calix scaly of about 6 unequal ovate and obovate scales persistent much shorter than the large berry which has about 9 oblong seeds and is crowned by as many thick stellate clavate stigmas.

598. *EMPETRUM NIGRUM* L. and all European bot. A boreal plant of which I have specimens from Sweden and the Alps. They answer to the Linnean description of it by *leaves quaternate petiolate ovate lanceolate obtuse, berries black subsessile*. Therefore quite different from our American species; but I have also specimens from Sibiria and the Alps nearer to our sp. and therefore there may be two species in Europe as probably also with us. Wilde-now thus say *E. nigrum* has oblong revolute leaves.

599. *EMPETRUM CRASSIFOLIUM* Raf. smooth procumbent, leaves 3-4nate petiolate linear obtuse thick, flat above, convex enerve beneath, patent crowded.—Sibiria and perhaps other parts, my specimens have no berries, and but few flowers, leaves 3 lines long, quite thick, sometimes sulcate beneath, but not nerved, some appear to be fistular: flowers as in *E. nigrum*, sent me as such. Is it found in Origen? berries probably black.

SHRUBBY LABIATE.

600. *RAFINESQUIA* or *DIODEILIS* R. fl. tel. 750. *Cunila*, *Melissa* and *Gardoquia* of Authors! . . Calix tubular strait striated subbilabiate upper lip bidentate, lower tridentate, mouth closed by hairs, corolla tubular erect bilabiate, upper lip concave notched, lower lobe subequal stamens 4 remote, anthers cordate bilobe, seeds smooth. *Shrubby, flowers axillary red*.—A very fine peculiar Genus forced into 3 alien

Genera, I have proved in flora tellur. how different is Gardoquia. It is one of the Genera to which I give my own name, and if any one cavils at it I offer a second abridged from *Diodontocheilis*! that I may not lose the merit of my sagacity in ascertaining this Genus. I have already two sp. of it.

601. **RAFINESQUIA COCCINEA** fl. tell. 751. Cunila! do Hooker, Melissa! do Spr. Gardoquia! hookeri Benth. Don. Lindl. b. reg. 1747. Shrubby smooth, leaves obovate sessile subacute, peduncles axillary 1-3flore—A small shrub of Florida with handsome large scarlet flowers, branches terete sub 4 angular, leaves commonly remote small.

602. **RAF. COCCINEA VAR. OBTUSIFOLIA** Raf. differ. branches more 4angular, leaves equal to internodes obtuse one third inch long, flowers scarlet over one inch long.

603. **RAFINESQUIA ANGUSTIFOLIA** Raf. suffruticose, branches filiform hardly angular, leaves sessile smooth oblong or cuneate obtuse crowded above, peduncles very short uniflore—in Alabama, smaller shrub still with narrow leaves and smaller flowers rather red than scarlet. Given me as a var. of *R. coccinea* by Durand; it is very near *Gardoquia chilensis* in habit, but quite unlike in the calix and flowers.

604. **PILOBLEPHIS** Raf. *Satureia* and *Cephalothymus* Benth. Quite a peculiar G. discovered by Bartram 60 years ago, unnoticed by all our botanists, altho' in their herbals! until Bentham found it in Banks Herbarium, but he left it with *Satureia* as a subg. with an improper name, mine means *ciliated head*. It differs as much from *Satureia* as *Pycnanthes* does, both by characters and habit. *Shrub*

with habit of Ericas and Empetrum, flowers capitate without involucre, but many ciliate imbricate bracts, calix large membranaceous 5fid subequal campanulate, corolla nearly as in Satureia, 4 filaments and anthers, seeds 1 or 2 at the bottom of the large calix—this will probably be like Pycnanthes an American Genus of many sp. but now I know of only one type. All the Satureias are foreign to America.

605. *PILOBLEPHIS RIGIDA* (or *ericoides*) Raf. *Satureia rigida* Bartr. 1775, Benth. Anonymos N. G. Baldwin in Collins herb. Shrubby decumbent, branches terete rigid leaves imbricate linear obtuse smooth margin revolute, flowers in terminal globular heads, bracts linear lanceol. obt. hairy ciliate as long as flowers—Shores of Florida, in sands, small procumbent Shrub quite evergreen, flowers incarnate concealed among the bracts. If this shrub has been unnoticed for 60 years (after Bartram) in our books, I may hope that in 60 years hence my new plants will also be properly noticed again! Bartram did not describe it, I describe my new plants! Baldwin found it again in 1816 and deemed it a new genus as I do, altho' he neglected naming it like so many other rare plants of his.

606. *AUDIBERTIA INCANA* Benth. Lindl. b. reg. 1469. Suffruticose glaucous, leaves cuneate and obovate, flowers verticillate, bracts orbicular ciliate—Orion, a N. G. of Benth. with habit of *Origanum*, but very distinct by 2 stamens like *Cunila*, flowers blue, calix ovate bilabiate, upper lip entire, lower bifid, corolla tubular, subbilab. upper lip bifid, lower trifid, medial lobe notched, anthers dimidiate. Not

in Eaton, nor any of the above shrubby Labiate.

MONOGRAPH OF CEANOTHUS.

This pretty and useful natural Genus deserves a complete examination, being now greatly increased in species: they are all small shrubs, or bushes, but some are perennials. Linneus had only one, Michaux, Bigelow, Nuttall Hooker and myself have added many others, altho' Eaton enumerates only 6. All have estival white flowers in thyrsoid corymbs, but *C. azureus* has blue flowers. Leaves alternate with short petiols. Roots red and medical see my Med. flora. This G. commonly united to the Rhamnides, rather belongs to the Phyllicides with *Phylica*, *Bumalda*, *Brunia*, *Hovenia*, *Colletia*, &c, having all fruits coccular as in *Euphorbides*; but the stamens are opposed to petals and often inserted thereon. The Asiatic and African sp. of this G. appear to form peculiar genera, the asiatic form the *G. Carpodetus*, the polynesian the *G. Pomaderis*, and the African must form my *G. Hypoma*, see fl. tel.

607. CEANOTHUS OFFICINALIS Raf. Med. fl. 2 p. 205. Americana L. and Authors, now become an absurd name, the whole G. being American—Shrubby, branches terete smooth fuscate leaves ovatoblong acum. serrate trinerve pubescent and pale beneath, petiols pubescent, base rounded, panicles lax terminal or on long peduncles angular, pubescent. pedicels geminate or fasciculate—from Canada to Alabama and Louisiana, 2 or 3 feet high, leaves 2 or 3 inches long, end often obtuse altho' acuminate, flowers very small, panicles often with one or two small leaves. Var. 1. *Oratus*, leaves rather oval, 2 *Acutus* all the leaves acute, 3

Paniculatus large compound ovate panicles. 4
Foliosus, with foliose panicles.

608. *CEANOTHUS GLOMERATUS* Raf. americ. Elliot. Shrubby branches pubescent angular fuscate, leaves ovatoblong acute at base and apex, serrulate trinerve, petiols and nerves pubescent fulvous, panicles glomerate axillary on long hairy peduncles, pedicels short crowded with lanceolate bracts—in Virginia, Carolina, Tennessee, Alabama, Kentucky &c commonly blended with the last, leaves smaller with fuscate or rufous nerves pale beneath with few hairs except on the nerves, flowers on smaller panicles glomerate crowded larger, the small bracts often fall off in the anthesis. Var. *fuscatus*, with dark fuscate branches and nerves, even leaves fuscate above, flowers quite glomerate. Both 2 or 3 feet high. Root more astriugent and darker red.

609. *CEANOTHUS LATIFOLIUS* Raf. americ. var. *tardiflora* Eaton. Shrubby, terete pubescent fuscate, leaves broadly oval, base subcordate, unequally serrate acute trinerve, petiols hirsute, quite villose and glaucous beneath, panicles lax ovate compound axillary, peduncles villose cinereous bifoliate—Glades of West Kentucky and Tennessee, stem 2 or 3 feet, leaves large 3 or 4 inches long, 2 or 3 wide, panicles with shorter peduncles, but long pedicels.

610. *CEAN. HERBACEUS* Raf. 1808 Tor. Beck Eaton (or *C. levigatus*) *C. perennis* Pursh, Nut. El. Perennial, quite smooth, stem simple annual terete fuscate, leaves ovate acum. base acute, trinerve serrulate, glaucous beneath nerves fuscate, panicles lax thyrsoidal—Virginia and Carolina near streams, disc. by Hings-

ton in 1800 at the falls of the Potowmack, where found by me again, stems 1 or 2 feet high seldom branched, leaves as large as in *C. glomeratus*, peduncles, and flowers similar to it, but not glomerate quite lax.

611. *CEAN. ELLIPTICUS* Raf. Shrubby, leaves remote elliptical hardly serrulate trinerve obtuse, beneath puberulent, raceme thyrsoidal small on short petiols and bracteate—Apalachian Mts. of Georgia and Alabama, Cherokee and Wasioto Mts. one or two feet high, leaves small on very short petiols, flowers small with bracts as in *C. glomeratus*.

612. *CEAN. VIRGATUS* Raf. *intermedius* Mg. El. P. N. Shrubby, branches elongate slender virgate subangular smooth rusty, leaves broadly lanceolate acute subserrate trinerve, nerves and petiols pubescent, racemes short corymbose lax—from Virginia to Florida, pedal or sesquipedal, with some long branches at the base, leaves small uncial narrow, panicles quite small on long peduncles, formed by two or 3 small umbels.

613. *CEANOTHUS ? ATROPURPUREUS* Raf. Shrubby, quite smooth, branches terete spreading rigid dark purple, leaves subsessile oblong entire, lower acute, upper obtuse, not trinervate, tip of petiol and base of main nerve often bearded—I refer protem to this Genus, a doubtful shrub of Florida, found without flowers in Collins Herb. owing to the similarities of habit with the last and next sp. but it may turn out to be something very different, perhaps an *Ilex ?* or *Bumelia ?* Leaves just like the last in size, but entire or slightly erose, and petiols exceedingly short.

614. *CEAN. SANGUINEUS* P. N. Hook. Eat. Shrubby, branches purple, leaves subsessile cuneate oblong serrate pubescent beneath, panicle axillary glomerate, flowers crowded—regions of Missouri and Origen, seen dry, shrub 3 feet high.

615. *CEAN. GLANDULOSUS* Raf. *ovalis* Big. Beck, Eat. *ovatus* Dec. *intermedius* Hook. fl. interm. var. *corymbos.* Mg. Perennial? stem sulcate pubescent, leaves ovatooblong obtuse some obovate, glandular crenate trinerve, petioles and nerves pubescent, panicle terminal corymbose formed by lax umbels—Canada and Lake Champlain, a very distinct sp. my specimen is quite heterophyllous, the name of *Ovalis* does not apply, blended with my Southern *C. virgatus* by Hooker, leaves 1 or 2 inches long, large flowers, peduncles calix and corols white. Apparently not shrubby. This was my *Forrestia thyrsoidea* of 1808 but it is not even a subgenus, unless the glandular leaves of this and the 3 next appear to indicate one.

616. *CEAN. VELUTINUS* Hook. fl. tab. 45. Shrubby, leaves rounded elliptic coriaceous glandular dentate trinerve, white tomentose beneath, panicles terminal thyrsoidal foliose at base—in the Origen Mts. not seen by me, adopted from the good figure of Hooker, and I add two others of his to complete this monograph.

617. *CEAN. LEVIGATUS* Hook. fl. differs from last by, quite smooth, panicle quite foliose, flowers glomerate—found at Nutka by Menzies.

618. *CEAN. BICOLOR* Raf. *thyrsoiflora* Esholtz and Hook. fl. shrubby, branches angular, leaves subsessile oblong trinerve, nerves pilose, glandular serrate, panicle thyrsoidal base foliose—New Sibiria in N. W. America, calix blue, pe-

tals white, whence my name, since all the sp. are thyrsiflore.

619. *CEAN. AZUREUS* Desf. ic. 232. Lod. cab. 110, Edw. b. reg. 291. Dec. Shrubby pubescent leaves ovatoblong acute rough serrate, beneath tomentose, panicle thyrsoidal, base foliose, flowers blue—in Mexico, New Mexico and Texas, an elegant species.

620. *CEAN. MICROPHYLUS* Mx. E. &c. Shrubby much branched, quite smooth, branches divergent, leaves fasciculate minute oboval or rounded obtuse trinerve, racemes terminal corymbose—Florida, Georgia, Alabama, a very peculiar sp. habit unlike the others, but like the next, flowers vernal as in the Southern species.

621. *CEAN. SERPYLLIFOLIUS* Nut. Eat. Decumbent bushy, branches filiform, leaves minute nearly smooth elliptic ovate obtuse serrulate, petiols and nerves strigose, panicles axillary peduncled pauciflore glomerate—Florida, very small, habit of thyme like the last, and probably both ought to form a subgenus. Is it only a var. of it? Elliot has blended both; disc by Dr. Baldwin near St. Mary.

Genus *EVONYMUS*.

Without giving a complete monograph of our sp. I can greatly increase them having 4 or 5 new ones to describe. They form 3 subgenera with opposite leaves and axillary peduncles. This G. had been wrongly united to *Rhamnides*, since the stamens are alternate to petals, and the fruit is peculiar, it belongs to a peculiar family (with *Tobira*) near to the *Celastrides*. *Tobira* differs by 6 stamens and caps 3loc. polysperm.

622. *PLATOMESUS* Raf. calix 4lobed, 4petals,

4 stamens, capsule commonly 4lobe 4loc. 4 sperme.

623. *PENTINIUS* Raf. cal. 5dentate, 5 petals, 5 stamens, capsule commonly 5lobe 5loc. 5 sperme.

624. *PHYSCONDRA* Raf. calix inflate membranaceous entire or subcrenate, petals 4 or 5, anthers 4 or 5 sessile, capsule 4 or 5 sperme.

625. *EVONYMUS* (Platom) *CUNEATUS* Raf. Branches terete smooth, leaves cuneate acute serrulate smooth, peduncles triflore longer than petiols, petals 4 oblong obtuse—Oregon region, shrub 4 or 5 feet high, branches naked below nearly articulate, petals white, fruit not seen, leaves uncial terminal.

626. *EVON.* (Platom) *HETEROPHYLLUS* Raf. Branches subangular smooth subrugose, leaves dissimilar cuneate or obovate acute, or elliptical acuminate, entire or serrulate, rugose beneath, peduncles biflore elongate longer than petiols, pedicels divaricate, petals 4 obovate obtuse, fruits smooth—Apalachian Mts. shrub 4 feet high, petals white, fruits incarnate 2 to 4 lobed.

627. *EVON.* (Platom.) *ACUMINATUS* Raf. Branches terete smooth, elliptic acuminate, base acute, subcrenate, some lower ones obtuse or retuse, peduncles elongate 1-2flore, petals 4 cuneate obtuse, fruits smooth deeply lobed.—Oregon and Sibiria, has been blended probably with *E. europeus*, which I have also and differs by smaller narrower entire leaves and peduncles multiflore as long as leaves. This has large leaves on long petiols, the petals white fruits red with 2 or 4 lobes.

628. *EVON.* (*Pentinius*) *MURICATUS* Raf. *americanus* L. &c. Branches 4gone smooth,

leaves subsessile ovate or lanceolate acute or acum, serrate, peduncles 1-3flore, petals 5 obovate, capsules muricate verrucose—from Canada to Carolina in Mts. Shrub 4 to 6 feet high, branches rigid, leaves middle size, petals greenish white with rose tinge. Several varieties 1. *Biflorus*, leaves all lanceol. acum. subserrate, peduncles all biflore, petals rounded unguiculate. 2. *Obliquatus*, leaves ovate lanceol. commonly obliquial, peduncles uniflore. Mts. Alleghanies.

629. EVON. (Pentinius) SARMENTOSUS Raf. amer. var. sarm. Nut. Eat. &c. Stem sarmentose 4gone radicant, leaves subsessile ovate lanceol. acute undulate crenate opaque lucid, peduncles 2-3flore, fruits scabrous—Rocky woods of the Alleghany Mts. and River Susquehanah, certainly a distinct sp. forming a Vine 10 to 20 feet high with many slender branches.

630. EVON. (Pentinius) ANGUSTIFOLIUS Lyon, Pursh, El. Eat. &c. A rare species of the Appalachian Mts. of Georgia and Alabama, not at all doubtful, my specimen from Lyons in Collins Herb. has slender 4gone branches, leaves remote subsessile narrow lanceol. acute falcate entire, peduncles erect uniflore with 2 setaceous bracts.

631. EVON. (Platom) ATROPURPUREUS Jaq. and all Authors. A fine shrub 6 to 15 feet high, assuming the appearance of a small tree, near streams chiefly from Carolina to Kentucky, Missouri and Origen, flowers dark purple, 3 Var. 1. *oblongifolius*, 2 *latifolius* leaves ovate and obovate acum. 3, *grandifolius* large elliptic leaves 5 to 8 inches long.

632. EVONYMUS (Physcondra) OBOVATUS Nut.

&c. A very small sp. well described by Nuttall, creeping pedal, found from New England to Ohio. Almost a peculiar Genus by the shape of calix, but petals as in *E. muricatus*—Thus I have nearly rectified this G. and 8 sp. of it. My N. sp. are distinct from *E. verrucosus* and *latifolius* of Europe which I have.

Natural family of SPIRADIA.

The Linnean Genus *Spirea* has been kept nearly entire by Decandole but divided into subgenera, that differ so much in habit and characters that they ought to become Genera. *Filipendula* of Tournefort, *Aruncus* of Adanson, *Gillenia* of Mench, now generally adopted, and *Purshia* of Decand. are certainly peculiar Genera, as well as my G. *Thecanisia*, *Epicostorus* &c. As early as 1815 I formed a new family the SPIRADES in my Analysis of Nature page 173 with these Genera, adding *Rhodalex*, *Basilima*, *Drymopogon*; the Genera *Tigarea*, *Neilia*? *Tetracera*, *Suriana*, &c probably belong to it. This natural family is quite distinct from the *Poterides* and *Senticoses* by the fruit capsular with lateral styles and opening valvular: *Gillenia*, *Aruncus*, *Thecanisia*, *Filipendula* that are not frutescent will be illustrated elsewhere and in my fl. tellur. I now propose to revise the shrubby Genera chiefly, which are *Spirea*, *Physocarpa*, *Basilima*, *Schizonotus* and *Epicostorus*. The Monographs of *Spirea* by Smith in Rees, Poiret in Cycl. and Seringe in Decandole are by no means perfect even as to species and synonyms and I shall rectify them. I have verified many kinds by the figures of Pallas in flora Rossica, which had not always been properly applied and quoted.

633. SPIREA Raf. calix 5fid persistent campanul. bearing on a glandular ring the 5 petals and stamens 20 to 30, Pistils 5 free sessile, styles lateral, 5 free capsules sessile equal opening inside oligosperm. *Shrubs with simple alternate leaves, flowers paniculate, thyrsoidal, branches racemose spicate or corymbose.* The name ought to have been written *Spiraia*, it answers to the Subgenus *Spirenia* of Seringe. *Chamedryon* has umbellate or corymbose flowers.

634. SPIREA TOMENTOSA L. &c. Dec. Beck. Stem angular nearly simple, rusty tomentose, leaves petiolate ovate lanceolate, acute at both ends, unequally serrate, beneath white tomentose, panicle ample compound racemose, calix and capsules fuscate villose—This is the original sp. of Kalm, Lin. &c found near Philadelphia and from New York to Carolina; but so many sp. have been blended with it, that nearly all the synonyms apply to others. A small shrub 2 to 4 feet high, flowers purple handsome estival. Eaton had many var. of this in his first editions as myself in Med. flora, that are my next distinct deviations or Sp. the real var. are 1. *albiflora*, 2 *elatior*. 3. *ramosa* with a few branches, and the next.

635. *Spira tomentosa*, var. *virgata* Raf. (Elliot) Branches virgate rusty tomentose leaves rugose above, petals small hairy outside often trilobe—Hills of Carolina and Apalachian Mts. large 4-6feet, often ramose.

636. SPIREA ROSEA Raf. diff. 634, leaves lanceolate remotely serrate acute, fulvous tomentose beneath, panicle lax, peduncles as long as calix—West Kentucky to Alabama, disc. by Mrs. Holley, a beautiful shrub with fine rosate

flowers, it deserves to be deemed a peculiar sp. by narrow leaves not white beneath, and lax rose flowers.

637. *SPIREA FERUGINEA* Raf. stems angular simple fuscate tomentose, leaves oblong cuneate sessile, broadly serrate, beneath rusty tomentose, panicle ample foliose at the base, branches spicate, flowers subsessile, calix and capsules rusty rugose scabrous—East Kentucky, Mts. Wasioto and Apalachian, shrub 2 or 3 feet high, woody at base, flowers purple: easily known by the color, cuneate leaves, spikes and capsules. Var. *angustifolia*, leaves narrow cuneate, spikes slender. Pine barrens of New Jersey.

638. *SPIREA GLOMERATA* Raf. tomentosa Med. fl. tab. 88 stem simple terete sulcate fuscate tomentose, leaves petiolate elliptic or ovato-blong jagged serrate, beneath fulvous tomentose, panicle slender spicate, flowers subsessile glomerate, calix fulvous tomentose—Alleghany Mts. very small suffruticose pedicel without branches, flowers small incarnate. Near to *Sp. rosea*, but different leaves, sessile flowers quite jagged or duplicate serrate, nankin color beneath. Var. 1 *major*, bipedal, 2 *pallida*.

639. *Spirea glomerata* var. *cinerea* Raf. differ. virgate, stem subterete not striate, ashy tomentose, leaves also beneath, and calix likewise—Pine barrens of New Jersey, pedicel, flowers quite glomerate sessile redish.

640. *SPIREA PARVIFOLIA* Raf. Stem branched angular purplish smooth, branches tomentose, leaves sessile small elliptic base entire, serrate above, beneath grey tomentose, panicle spicate glomerate, flowers sessile, crowded, ea-

lix and capsules grey tomentose—Canada, Lake Champlain, Saranac and Oquago Mts. a small ramose shrub pedal, flowers incarnate, leaves only half inch long.—All the above sp. agree in nothing but the tomentose leaves beneath, to deem them all varieties would be preposterous, as no character including them all could be framed ; but they afford like the 8 blended sp. of *S. salicifolia*, fine illustrations of real natural specific deviations, similar to those of the Genus *Azalea* ! now admitted as species.

641. *SPIREA SALICIFOLIA* L. Dec. &c. Quite smooth, branches elongate terete yellowish, leaves subsessile broadly lanceolate equally serrate, acute at both ends concolor, panicle racemose compound base foliose, bracts oblong.—In North Europe, Sibiria and Origen, my specimen is simple 2 feet long, leaves 3 inches long one wide, flowers white peduncled crowded. Five other American sp. have been blended with this by all the botanists, which altho' deviations perhaps are totally distinct from this: I have compared them all carefully and ascertained excellent peculiar characters in each, they only agree in having thin smooth leaves and the branches of the panicle nearly corymbose. Var. *Sibirica* Pallas fl. Ross. t. 21. differ branches yellowish, leaves unequally serrate panicle lax not foliose, flowers large incarnate. Perhaps a peculiar species *Sp. Sibirica* Raf.

642. *SPIREA FLEXUOSA* Raf. salicif. of many Amer. bot. alba ? Erhart. Mg. Quite smooth, branches flexuose angular redish, leaves petiolate oblong lanceol. deeply serrate, base entire cuneate pale beneath, panicle racemose base foliose, no bracts—Mts. Alleghanies and hills from Canada to Virginia, pretty shrub 2 to 4

feet high, leaves only two inches long, flowers small white estival. If it is the *sp. alba* of Erhart it is also found in Sibiria.

643. *SPIREA AMENA* Raf. 1808. Quite smooth branches fuscate terete below angular above, leaves imbricate sessile oblong or elliptical sharply serrate, some obovate below, panicle racemose ovate naked.—From New Jersey to Kentucky, perhaps Origen and Sibiria, as I have received it also as Sibirian, similar to the last but distinct by stem flowers larger incarnate, no petiols and leaves smaller commonly uncial. Var. *pauciflora*, leaves oblong lanceolate or narrow elliptic serrulate, panicle capitate almost simple with few large pink flowers. Sibiria, this is *Sp. salicifolia* var. *b.* Pallas fl. ross. tab. 22. branches flexuose.

644. *SPIREA OVATA* Raf. Quite smooth, shoots simple virgate terete rugose purplish, leaves subsessile ovate acute imbricate deeply serrate or jagged, lower obovate, panicle racemose glomerate, base not foliose, some oblong bracts—Mts. Alleghanies, Wasioto and Apalachian, stems simple 1 or 2 feet high, only woody at base, leaves uncial or smaller, flowers white.

645. *SPIREA CARPINIFOLIA* W. enum. Watson dendr. 66, Loudun Cycl. Quite smooth, leaves ovate elliptic acute at both ends coarsely serrate, panicle racemose spreading—Said to be from North America, flowers white, not seen, nearest to my *Sp. ovata*, stated by Muhlenberg to be the same as my *Sp. corymbosa*, but that is not paniculate; therefore a doubtful species.

646. *SPIREA HETEROPHYLLA* Raf. Quite smooth branches angular purplish, lower leaves rounded or lobed, medial obovate, upper elliptical,

all subpetiolate acute and sharply serrate, panicle racemose not foliose but with linear bracts—Alleghany Mts. and Alabama, 2 or 3 feet high ramose, leaves biuncial very broad, flowers white. A very distinct sp.

647. *SPIREA CILIATA* Raf. salicif. Elliot. Stem angular pubescent, leaves sessile imbricate con-similar cuneate acute, base entire, ciliate, sharply serrate upwards, panicle racemose glomerate elongate, bracts linear—From the River Wabash to Carolina near streams chiefly, a very peculiar sp. quite ciliolate, middle nerve often also, bipedal, leaves small uncial, flowers white
Var. 1. *petiolata*, leaves subpetiol. broader, 2 *multiflore* panicle ramose.

648. *SPIREA OBOVATA* Raf. dec. 25. *crenata* Tor. Eat. Mg. hypericif. var Beck, *chamedrif.* Pursh. Quite smooth cespitose suffruticose creeping, branches flexuose angular reddish, leaves similar obovate subsessile obtuse, base acute entire, upwards unequally serrate, corymbs racemose terminal, bracteoles linear, petals obovate crenate undulate—Rocky summits of Mattawan and Kiskatom Mts. of New York disc. 1817, descr. 1818 in my decads, mistaken or omitted by all our botanists, probably a boreal plant. Shoots or branches assurgent woody only 4 to 16 inches high, leaves uncial concolor, panicle thyrsoidal ovate formed of small lateral corymbs, thus forming a passage to the subg. *Chamedryon*, flowers white blossoming in June. Having obtained specimens of the real *Spir. crenata*, *ulmifolia* and *chamedrifolia* I can vouch that this is quite different and no *Chamedryon*. Var. *Sibirica* of Pallas nameless fig. t. 26 f. 2, merely differ by narrow leaves nearly entire glaucous beneath.

649. *SPIREA BRACTEATA* Raf. *levigata*? L. or of some botanists. Quite smooth, branches terete yellowish, leaves quite sessile oblong entire, base cuneate, apex obtuse cuspidate, some mixt ovate elliptic, panicle racemose, bracts ovate acute—Siberia and New Siberia, probably a large shrub, branches thick, leaves 2 or 4 inches long, one broad, base almost semiamplex. panicle compound, flowers white racemose. In my specimen some elliptical smaller leaves intermixt. Not quite answering to *Sp. levigata* see below, yet sent me as such.

650. *SPIREA CUNEIFOLIA* Raf. Herb. Quite smooth branches terete dark purple, leaves sessile cuneate entire, apex very obtuse cuspidate, panicles axillary and terminal racemose, bracts subulate—Oregon and New Albion, a fine handsome shrub desc. by Walton, quite different from last by red flowers, small bracts and large leaves 3 to 6 inches long, quite cuneiform or tapering from end to base. The real *Sp. levigata* of Lin. is akin to both these sp. but it appears to differ by lanceolate glaucous less obtuse leaves and white flowers, (some botanists call the cuneate leaves lanceolate! which is the reverse tapering from base to end) while Smith blends the *Sp. altaica* with it, which I add for contrast.

651. *SPIREA ALTAICA* Pallas fl. ross. t. 23. Stem terete redish, leaves fasciculate sessile cuneate acute repand glaucous, racemes paniculate axillary and terminal, bracts lanceolate.—Altaic Mts. flowers white large, capsules large smooth 2sperme, leaves 2 or 3 inches long, not cuspidate nor obtuse; thus quite different from the two last. Is it the real *levigata* of Linneus as deemed by most of botanists?

652. *SPIREA DOUGLASSI* Hook. fl. Pubescent, leaves elliptic apex serrate, white hairy beneath, panicle oblong, calix reflexed, capsules smooth—N. W. America, flowers small, near to *Sp. tomentosa*, no more different from it than my removed deviations.

653. *SPIREA MENZIESI* Hook. fl. differs from last only by leaves smooth beneath, yet made a species by Hooker.

Subgenus *CHAMEDRYON* Ser. Dec. only difference flowers umbellate or corymbose, calix often nervose or venose. .

654. *SPIREA* (Ch.) *CHAMEDRIFOLIA* L. Jaq. and Europe. Smooth, branches cinereous subangular, leaves petiolate obovate entire obtuse base acute or unequally repand lobed or jagged near the end, racemes terminal simple corymbose, pedicels filiform lax—Carpathian and other European Mts. many short branchlets, leaves small thin uncial, flowers really in a corymbose racemes, the lower having long slender pedicels, petals white rounded. My description is original from a specimen of Jacquin, introduced here to compare it with the blended kinds.

655. *SPIREA* (Ch.) *VERSIFOLIA* Raf. *chamedrif.* Pallas fl. t. 15. Sm. Hooker fl. bor. &c. Smooth, branches terete reddish, leaves petiolate acute at both ends ovate serrate, base entire, the lower duplicate serrate ovate lanceol. flowers subumbellate—Siberia and New Siberia, flowers white. almost in umbels since pedicels fasciculate, thus distinct from the last, and leaves quite unlike; but Pallas says the leaves are variable, probably many species are even blended here, one of which I can ascertain.

656. SPIREA (Ch.) DAURICA Raf. *chamedrif.* Var. *Pallas* t. 15. differs by leaves elliptic pubescent nearly entire, crenate above, tomentose beneath—Daurian Mts. of Siberia, nearer to *Sp. douglassi* than the *Sp. versifolia*, but flowers not paniculate.

657. SPIREA (Ch.) ULMIFOLIA Scop. t. 22. *W. P. Sm.* *chamedrif.* *Amman* Lind. b. reg. 1222! Smooth, branches slender flexuose angular, leaves petiolate ovate laciniate serrate acute, base entire subacute, flowers terminal corymbose crowded, pedicels filiform often with a subulate bract—Mts. of Europe and Siberia, my specimen is an original one of Scopoli from Carniola, and agrees perfectly with the figure of Lindley with mistaken name: totally different from *Sp. chamedrif.* leaves and flowers larger.

658. SPIREA (Ch.) BETULIFOLIA Pallas fl. t. 16. not Pursh. Smooth, shrubby branches terete redish, leaves subsessile ovate rounded laciniate serrate, yellow beneath, flowers terminal corymbose lax—Siberia and New Siberia? flowers white.

659. SPIREA (Ch.) OSTRYFOLIA Raf. *betulifolia* Pursh not Pallas. Suffrutescent, quite smooth, shoots terete redish, leaves petiolate acute at both ends ovateoblong laciniate serrate except at the base, apex often oblique, glaucous beneath, corymb. pauciflore simple foliose crowded—Alleghany Mts. of Virginia found there 1825, intermediate between the last and the next, semipedal, leaves 2 inches long quite thin, flowers white. Var. *pumila*, 4 inches high flexuose few leaves the lowest large duplicate serrate, corymb glomerate, Wasioto Mts.

660. SPIREA (Ch.) CORYMBOSA Raf. 1804, precis 1814, Mg. 1812, 1818. Lod. cab. (or sp. glauca Raf.) carpinifolia? W. Suffruticose quite smooth, stem angular redish, leaves petiolate ovateoblong acute at both ends, unequally serrate entire at the base, quite glaucous almost white beneath, corymb terminal multiflore compound subfoliose each peduncled crowded — Alleghanies of Pennsylv. Maryland and Virginia on dry ridges, stems pedal often annual leaves 1 or 2 inches long, nerves prominent beneath, flowers white in large multiflore corymbs with 1 to 3 small ovate entire leaves, flowers nearly level large, stamens long. By a misprint I stated this sp. to be trigynous in my precis 1815, it is 5gynous. I discovered this plant in 1804 and communicated it to Muhlenberg. Sp. glauca would be a better name as there are so many corymbose kinds.

661. SPIREA (Ch.) REPENS Raf. corymbosa Torrey, Beck, Eaton &c. Stems suffruticose creeping, shoots terete redish erect, leaves sessile smooth variable obovate oblong and ovate, obtuse or acute, unequally serrate, base entire, pale beneath, corymb terminal compound compact fastigiate subfoliose, stamens elongate. — Lake Champlain, Mts. Saranac and Oquago, shoots 4 to 6 inches long, leaves uncial, flowers small pale incarnate. Var. *pubescens*, leaves oblong obovate pubescent beneath, stem pedal and flowers pale rose color. This is the Sp. corymbosa of the above Authors, said to be pubescent. My specimens are all glabrous. Do they mean the next species?

662. SPIREA (Ch.) CRENATA L. Bar. t. 564. Smith hypericif. var. crenata Dec. not Beck.

Puberulent or pulverulent, branches angular purplish, leaves petiolate glaucous cuneate entire or apex crenate dentate obtuse, base acute, smooth above, trinerve and puberulent beneath, corymbs terminal on branchlets pauciflore subumbellate, stamens very short—Europe from Spain to Hungary; my specimen is from Hungary, with branches ramose not virgate, leaves small semiuncial, flowers white, corymbs 5-7 flore, pedicels puberulent sometimes with a subulate bract. This Linnean sp. is not American, Hooker has it not, Smith has proved that several sp. were blended, the Sibirian is my next. Even Linneus in taking barrellier's plant as type, mistook others for it and called the leaves ovatoblong, he meant obovate oblong. The name being equivocal and liable to objections, might be changed to *Sp. pulverulenta* Raf.

663. SPIREA (Ch.) DENTICULATA Raf. crenata Pallas. fl. t. 19. Wild. Pers. &c. Smooth, branches yellowish, leaves sessile obovate or cuneate denticulate acute upwards, beneath glaucous, lower leaves petiolate ovate denticulate, corymbs lateral pauciflore—Siberia and probably New Siberia, flowers white; even Pallas speaks of some varieties, one with laciniate trinerve leaves may be a distinct *Sp. laciniata?* Raf.

664. SPIREA (Ch.) JAPONICA Raf. crenata Thunb. fl. Smooth, branches virgate, leaves petiolate lanceol. hardly serrate, flowers umbellate, calix campan. deeply 5fid. petals emarginate—in Japan, called there Awaju, another mistaken reference to *Sp. crenata*, quite distinct from all, nearer to the next by the umbels.

665. SPIREA (Ch.) ITALICA OR RETICULATA Raf. hypericifolia Sm. and many Authors, type in Bocc. mus. t. 96. Quite smooth, branches angular purplish, leaves sessile cuneate entire obtuse concolor, beneath nerves reticulate, flowers in small pauciflore umbels sessile at the end of branchlets, calix venose, each segments ovate with 3 veins—Native of the hills of Umbria in Italy where discovered by Bocconi, and again by Sir James Smith see Rees Cycl. it has become common in gardens, where it is blended with the next, and botanists have been perplexed for its locality: hypericifolia having become equivocal ought to be changed as I propose. Leaves small semiuncial not glaucous nor trinerve, but slightly trinervate sometimes, umbels of 3 to 7 flowers, petals white obovate.

666. SPIREA (Ch.) VIRGATA Raf. hypericifolia of Lin and many botanists, hyper. var. plukenetiana Dec. Hooker, Beck. Pluk. alm. 218. 5—Branches fuscate angular rugose virgate, leaves sessile cuneate obtuse or retuse, entire smooth above, pubescent and glaucous beneath, nerves with parallel branches not reticulate, umbels pauciflore lateral subsessile foliose at base, pedicels angular, calix decangular at base, segments uninerve.—This is the real American Species, so long deemed doubtful, native of boreal America and New Sibiria, common in our gardens; flowers vernal in white umbels almost sessile at first, but peduncled and foliose as the leaves unfold, these are small semiuncial nearly similar to the last in shape and size, but thicker and quite different beneath, the calix is very peculiar by its 10 angles or nerves. Var. *hookeriana* Raf. Leaves smooth entire, umbels corymbose sessile, of N. W. America is proba-

bly a peculiar species near to my *Sp. crenata*, as it cannot be *Sp. italica*! It must be better described, and may be called *Sp. hookeriana* R. It is akin to *Sp. japonica*. I hope to have thus ascertained many obscure or lost species, and elucidated the whole genus; in order to remove the difficulties I have been compelled to introduce some species not strictly American, but have greatly increased ours also. This will conclude the true *G. Spirea*, I shall now describe the akin blended Genera.

667. **PHYSOCARPA** Raf. subg. of *Ser.* (or *Physotheca*.) Diff. *Spirea*, calix deeply 5fid, pistils 3 united at base, capsules 3 coalescent swelled smooth, apex free bivalve, *leaves lobed, flowers in short corymbose racemes bracteated*—Thus it differs as much as *Gillenia* but has not a tubular calix.

668. **PHYSOC. RIPARIA** Raf. *Spirea opulifolia* L. &c. Var. *tomentella* Dec. Beck. Branches angular pale, leaves petiolate ovate rounded or oblong unequally serrate often lobed or trifid acute quite smooth, beneath pale trinervate, corymbs terminal, bracts oblong or laciniate, pedicles filiform pubescent, calix tomentose acute, capsules smooth much swelled—From Canada to Carolina, Louisiana and Missouri, on the banks of streams. Shrub 5 to 10 feet high, leaves 2 or 3 inches long, flowers white with pink shades, capsules fulvous or fuscate, seeds rounded yellowish. This has always been deemed the *Sp. opulifolia* by our botanists, and it was really that of Linneus, since he gives America as its only locality; but now many others must be separated. Var. 1. *parrifolia*, 2. *arborea*.

669. **PHYSOC. OPULIFOLIA** or **GLABRA** Raf. *Sp.*

opulif. Dec. and many botanists. Var. *glabra* Hooker. Quite smooth, branches angular cinereous, leaves ovate trilobe, petiolate, dentate or crenate, corymbs terminal, bracts ovato-blong pedicels smooth, calix smooth obtuse, capsules smooth compressed at the end—Mts. of East Europe, Siberia and Origen. Very distinct from the last by many characters, entitled to be a species. seeds obovate yellow.

670. *PHYSOC. TOMENTOSA* Raf. Sp. *capitata* Pursh, Eat. Sp. *opulif. var. tomentosa* Hook. fl. Leaves ovate sublobate, doubly dentate, reticulate and tomentose beneath, corymbs terminal crowded subcapitate on a long peduncle, calix tomentose—Origen, another distinct sp. blended by Hooker, altho' distinguished by Pursh and others. The Sp. *monogyna* of Torrey is also reduced to Sp. *opulif.* by Hooker, while it is even a peculiar Genus! See the next.

671. *EPICOSTORUS* Raf. atl. J. page 144. Sp. *monogyna* Tor. rocky mts. 119. Eaton &c, Sp. *opul. var. monogyna!* Hook. fl. Calix campanul. 5lobed, petals 5, stamens 20 inserted on a circular free torus or base monadelphous, pistils 1 or 2 stipitate, with a style, capitate stigma, capsules 1 or 2 compressed not swelled free villose bivalve trisperme. *Habit of Physocarpa, pedicels few, no bracts.*—*EPIC. MONTANUS* Raf. as above. Leaves rounded ovate base subcordate, subtrilobe, incise, dentate pubescent beneath, corymbs on short peduncles pauciflore, pedicels filiform calix obtuse pubescent—in the Origen mts. desc. by James, descr. by Torrey 1827, mistaken by Hooker since, ascertained by me in 1832, the generic name means 20 on a torus.

672. *SCHIZONOTUS* Raf. calix rotate

deeply 5fid colorate villose, petals 5 equal venose, stamens 20 inserted on a torus adnate to the base of calix, pistils 5 equal sessile, capsules 5 sessile tomentose monosperm. *Habit of the paniculate Spiræas.* I have adopted this Genus and name on the suggestion of Lindley, who proposed to unite to it the next, but the habit is too different. Schizonotus appears to mean *Split back* and I do not know how it applies unless the capsules open outside.

673. SCHIZONOTUS DISCOLOR Raf. Spirea do Pursh, Torrey Dec. ariafolia Sm. Hook. Lind. b. reg. 1365. Leaves petiolate ovateoblong sublobate and laciniate serrate, white villose beneath, flowers terminal paniculate racemose, pedicels and calix villose, petals oblong with 3 veins—Oregon region and Mts. A very peculiar shrub, quite different from my *Thecunisia discolor* 297, to which I referred by mistake the Sp. discolor of Pursh, flowers white, leaves called elliptic by Smith, ovate by Pursh and Torrey but they are really ovate oblong.

674. BASILIMA Raf. 1815. Sorbaria subg. Ser. Schizonotus Lind. Cal. patent 5parted smooth not colorate, base acute, petals 5, stamens 15 to 20 inserted at the base of the calix, pistils 4 to 5 sessile, capsules 4 to 5 unequal sessile smooth monosperm. *Large shrubs with the foliage of Roses and Sorbus, leaves alternate stipulate oddly pinnate, folioles opposite sessile, flowers bracteolate paniculate or corymbose*—This fine natural Genus is certainly more different from *Spirea* than *Loweia* is from *Rosa*! it may be known at first sight by its habit.

675. BASILIMA SORBIFOLIA Raf. Sp. do L. &c. Pallas fl. t. 24. Quite smooth, branches

terete flexuose, leaves with 11 to 21 folioles broad lanceol. acuminate duplicate serrate, stipules oblong entire, flowers paniculate crowded, panicle oblong, bracteoles lanceol. equal to the short clavate pedicels—Siberia and New Siberia in N. W. America, a large shrub, with fine incarnate odorous flowers, folioles 1 or 2 inches long. My specimens have racemose panicles before anthesis, becoming glomerate in full bloom.

676. *BASILINA PYGMEA* Raf. Sp. sorbif. var. *pygma* Pallas fl. t. 25. Quite different from the last by folioles broader less acum. ovate lanceol. laciniate and flowers corymböse—Mts. of Siberia and probably in boreal America, a small dwarf shrub. Not seen but the figure of Pallas is strikingly different. It must not be blended with the *Sorbus pumila* of Origen, that has edible berries.

MONOGRAPH OF HYDRANGEA.

Linneus had only one species, our botanists have gradually increased them to 4; but I shall still further increase them to 10. They are all shrubs growing in mountains and hills on rocks and near streams, blossoms estival. The Genus had been united to the Saxifragides, but Lindley dreamt that it was to be united to the Caprifoliacea! with berries and monopetal corollas! It really belongs to the Natural family of DIERACEA in the Nat. Order ASCADIA, which includes all the Saxifragides with ovary and capsule coalescent or inferior. It includes two subgenera.

APLERIA. Flowers uniform consimilar.

MEGASTEIRA. Flowers dissimilar, the exterior enlarged neutral radial, as in *Opulus*, 3-4fid unequal.

The habit is peculiar, leaves opposite petiolate, flowers terminal cymose or paniculate. It is therefore a natural Genus, having affinities with the Myrtoides, Hederacea and Viburnides. The *G. Itea* and *Cunonia* differ by free pistil.

677. *HYDRANGÆA* (Apl.) *VULGARIS* Mx. P. B. *E. &c arborescens* L. &c. Branches terete sulcate pale, leaves ovatooblong acuminate, equally serrate smooth pale beneath, petiols and nerves pubescent, base rounded, cymes naked pubescent uniform, 2 oblong bracts—Alleghany Mts. and hills from Pennsylv. to Carolina and Kentucky, 8 to 5 feet high, leaves 2 or 3 inches long, flowers white and small. Var. *carnea*, flowers incarnate.

678. *HYDR.* (Apl.) *PANICULATA* Raf. Quite smooth, branches terete fuscate, leaves ovatooblong both ends acute, glaucous on both sides, nearly entire or remotely dentate, cyme paniculate lax with oblong sessile bracts—A very distinct Sp. found without locality in Collins herb. probably from Oregon and Sibiria, leaves large 4 inches long 2 wide, petiols shorter uncial slightly ciliolate, flowers much larger than in the last, with large lanceolate petals, calix angular, stamens erect longer than petals.

679. *HYDRANGÆA* (Meg.) *ACUTA* Raf. Branches sub angular purplish, leaves ovatooblong unequally serrate, acuminate, base acute entire, pale beneath, nerves puberulent, cymes pubescent naked hardly radiate, bracts small ovate—Apalachian Mts. Leaves very thin, cymes small, commonly with 1 to 3 small neutral flowers unequally trifid acute white. Thus a passage to the subgenus *Megasteira*.

680. *HYDR.* (Meg.) *GLAUCA* Raf. *radiata* glau-

ca Mg. Branches terete biangular, leaves ovate serrate acum. base rounded, beneath glaucous smooth, upper leaves subsessile, cymes radiate, neutral rays 3-4fid—Alabama and Alleghanies, leaves thin large, flowers white, rays with unequal rounded segments. Capsules as in most species with 10 prominent nerves.

681. HYDR. (Meg.) ROTUNDIFOLIA Raf. Branches angular rough, lower leaves petiolate rounded and orbicular acum. serrate, base not cordate, rough above, pale beneath, nerves rough pubescent, upper leaves sessile ovate base acute, cymes radiate, rays 3-4fid large rounded obtuse.—Wasioto Mts. of Kentucky and Virginia on rocks, 3 to 4 feet high, leaves small, flowers large white, rays very large unequal.

682. HYDR. (Meg.) HETEROPHYLLA Raf. Branches subangular, leaves elliptic, base cordate or truncate or oblique, apex acumin. falcate, unequally serrate, beneath concolor; nerves puberulent, upper leaves rounded base rounded, cymes hardly radiate pubescent, rays ovate acute.—Wasioto Mts. of Kentucky disc. 1823 with the last, akin but distinct by leaves and rays, these sometimes lacking.

683. HYDR. (Meg.) CORDATA Pursh. E. & c. Branches angular, leaves firm rounded base subcordate, dentate shortly acuminate, rough above beneath concolor veins reticulate smooth, cymes radiate, rays many ovate acute, 2 oblong bracts—Virginia, Carolina, Kentucky & c on rocks, humble shrub 2 to 4 feet high, with larger thicker leaves, and ample cymes.

684. HYDR. (Meg.) AMPLIFOLIA Raf. Branches subangular leaves on very long petiols thin ample ovate, lower subcordate at base, smooth

acumin. laciniate serrate pale beneath, cymes hardly radiate, bracts oblong—Banks of the Delaware and Susquehanna in Mts. Alleghanies, a large shrub 6 to 10 feet high, leaves very large 5 to 8 inches long, petioles 3 to 5 inches, cymes ample, only 1 or 2 neutral rays.

685. HYDR. (Meg.) DISCOLOR Raf. Branches angular, leaves elliptic acumin. base often acute serrulate, beneath whitish closely tomentose, cyme villose subradiate, bracts 2 lanceol. falcate sessile, rays small obovate acute—Apalachian Mts. often blended with the next probably, but distinct by leaves and rays, shrub 6 to 10 feet high, seen alive in gardens.

686. HYDR. (Meg.) NIVEA Mx. P. E. &c. radiata Walter. Branches terete dark purple, leaves firm ovate acum. base subcordate, serrate, rugose above and pubescent along the nerves, beneath snowy white tomentose, cymes subradiate, rays lanceolate—Apalachian and Unaka Mts. on the R. Santi &c. elegant shrub, well described by Elliot, my specimens are but slightly cordate, flowers white late vernal.

687. HYDR. (Meg.) QUERCIFOLIA Bartr. trav. ic. Pursh, E. &c. A well known shrub, now common in our gardens, found by Bartram in the Cherokee mts. 60 years ago, published and figured in his travels 45 years ago, yet omitted by Wild. Pers. and all till Pursh! Easily known by the lobate leaves and large thyrsoid panicle of pink flowers many neutrals. Bartram says it grows on the R. Oconi and in North Alabama near streams, has many divergent stems 5 to 6 feet high, the bark peels as in *Physocarpa*, the broad oboval neutral flowers are at first rosate, but gradually change to red, purple, rusty and brown.

FAGUS and CASTANEA.

The Beech and Chesnut trees so unlike and easily known by their fruits had been kept separate by the old Botanists, but Linneus took the fancy to unite them under his *Fagus*.—This linnean blunder was never assented to by the French Botanists, and now after 100 years the two genera are again acknowledged. But as to our American Sp. they are yet miscalled and deemed the same as the European; which is erroneous, none of our trees being quite identic! I must therefore revise them and add some new kinds.

688. *FAGUS ALBA* Raf. *sylvatica* of Amer. bot. not *L.* nor Europe. Bark smooth white, branchlets terete cinereous, leaves on short petiols ovate lanceol. dentate~ciliate, acute at both ends, green concolor; aments on short peduncles, nuts ovate mucronate obtusely trigone—Our white Beech tree, common all over N. America, 50 to 60 feet high, leaves 2 or 3 inches long. Dioical or polygamous.

689. *FAGUS HETEROPHYLLA* Raf. Bark and branches grey, branchlets terete, leaves subpetiolate ovate obovate rhomboidal and elliptic, acute at both ends, remotely uncinat serrulate above, sometimes jagged on one side, margin and nerves pilose, surface yellowish green concolor, aments on long filiform pilose peduncles, nuts ovate angles obtuse—Our Grey Beech is a rare tree, smaller than the last, occasionally met in the dry hills of the Alleghanies, leaves thin about biuncial of a yellowish cast, quite entire till the middle then serrulate and subacuminate.

690. *FAGUS FERRUGINEA* Ait. *purpurea* of

some botanists. Bark redish, branchlets terete sulcate dark purple, leaves subpetiolate ovato-blong remotely serrate acuminate, base acute or obtuse often obliquial, margin ciliate, young nerves pilose, surface rusty, pale beneath, aments on thick peduncles, nuts ovate acute with sharp angles—our Red Beech is found from New England to Missouri, the wood has a redish tinge like the bark, leaves 2 or 3 inches long, monoical, female flowers with many linear smooth bracts. A large tree 50 to 100 feet high.

691. *FAGUS NIGRA* Raf. Bark fuscate, branchlets blackish terete sulcate, leaves subsessile ample ovate rhomboidal, acumin. base acute, margin denticulate, surface dark green glossy on both sides, nuts acute angles sharp—This tree called Black or Brown Beech is sparingly found with the others, 40 to 70 feet high, branches so dark purple as to be almost black, leaves very large 4 to 5 inches long.

692. *FAGUS ROTUNDIFOLIA* Raf. fl. tex. 10 atl. J. 177. Bark fuscate, branchlets terete fuscate, leaves petiolate rounded repand acute, petiols margins and nerves above and beneath silky pilose, aments commonly geminate on short and thick peduncles silky like the bracts—A very distinct Sp. first described by me in 1833, it appears to have an extensive range, it first appears in Arkansas and Texas, extending to Origion and Sibiria, perhaps even to Europe, where several blended Sp. exist which I shall shortly notice for contrast with ours. This Beech tree is smaller than the others 20 to 30 feet high, leaves 1 or 2 inches long and broad. It may be called the Silky Beech.

693. *FAGUS SYLVATICA* L. &c. Branches

diffuse fuscate, leaves petiolate ovate acute subserrate undulate, smooth glossy yellowish, margin villose, peduncles filiform villose, nuts ovate angles obtuse—Europe and Sibiria. Var. *sanguinea* leaves red.

694. *FAGUS ASPLENIFOLIA* Raf. Leaves ovate serrate laciniate or lanceolate lobulate—Europe and Sibiria, a small tree.

695. *CASTANEA VESCA* W. P. Dec. &c. *Fagus castanea* L. &c. Leaves petiolate lanceolate acuminate, serrate by mucronate uncinateteeth, smooth beneath, capsules echinate disperse, nuts large dimidiate smooth mealy inside—South of Europe, very large tree, nuts 4 times as large as ours, darker, farinaceous not oily, one side flat, the other convex.

696. *CASTANEA AMERICANA* Raf. 1804. *vesca* var. *amer.* W. P. and the Amer. botanists. Branchlets fuscate rugose, leaves petiolate oblong lanceol. acum. remotely mucronate serrate, beneath glaucous and smooth (pubescent in young leaves,) aments fasciculate spicate interrupted glomerate, capsules echinate 3-5seeded, nuts small ovate apex villose acute, corylaceous sweet inside—All over North America from Canada to Louisiana and Oregon, quite a peculiar Sp. ascertained by me since 1804 in my fl. columbica. A smaller tree than the European only 40 to 60 feet high, growing in dry and rocky ridges and Mts. leaves 4 to 8 inches long, fruits quite unlike the European Chesnuts, small similar to filberds in size and taste, sweet oily, and edible raw, while the European must be boiled or roasted being acerb. Nuttal has well described the fructification. Var. 1. *ANGUSTIFOLIA* Raf. Leaves very long and narrow

lanceolate, on the Susquehanah. 2 Var. *latifolia*. Leaves broader and shorter, rather acute than acum. High Mts. a small tree. Perhaps these are two incipient Sp. I regret that I did not see the fruits.

697. *CASTANEA PUMILA* of late Authors, *Fagus* do L. &c, our well known Chincapin nut, edible sweet, from Delaware to Florida. Var. *fulva* Raf. Leaves broader often nearly obovate, almost fulvous beneath, nerves quite so, aments compact. Alleghany Mts.

698. *CASTANEA NANA* Mg. El. Eat. *alnifolia* Nut. a small shrub 2 or 3 feet high with ovate lanceol. leaves, almost obtuse, subtomentose beneath, capsules monosperm—Carolina to Florida, in sandy tracts, creeping.

699. *CLADRASTIS* Raf. fl. Kent. 1824, Neog. 1825. *Virgilia* Sp. Mx. and others. Calix gibbose campan. unequally 5lobed, petals 5 unequal unguiculate, superior larger obovate notched, 4 oblong obtuse subcordate at base. Stamens 10 free unequal filiform, pistil stipitate oblong, style curved compressed, stigma acute. Pod stipitate linear flat membranaceous polysperm, seeds oblong. *Trees with oddly pinnate leaves and racemose white flowers, without bracts.* As soon as I found this tree in Kentucky in 1821 I ascertained that it was not congeneric with the African *Virgilia*s which have calix bilabiate, 2 of the petals cariniform, stigma obtuse, seeds lenticular &c. The name means *brittle branches*.

700. *CLADRASTIS TINCTORIA* (or *albiflora*) Raf. *Virgilia lutea* Mx. ic. Nut. Eat. Dec. *Kentukensis* Dumont. Smooth tree, Leaves 5-7folioles petiolate alternate ovate acumin. entire, glaucous beneath, the odd larger ovate

rhomboidal, base acute, flowers in simple lax nodding racemes, white odorous, pods smooth. —From Kentucky to Alabama, but very local, a fine tree 30 to 50 feet high, branches brittle, wood branches petioles and nerves yellow, leaves ample, folioles 3 to 6 inches long very smooth. Flowers white fragrant like those of Robinia, not yellow as stated by Nuttall and after him by many, even Decandole! Michaux does not say so, in his colored trees they are white, his improper name *lutea* applied to the wood not the flowers, Nuttall did not see the flowers and mistook his meaning. I have seen them! The wood is yellow and dyes yellow like Fustic. The vulgar names are yellow wood and yellow Locust. The *V. Kentukensis* of Dumont Courset (Botaniste cultivateur) is only the young tree before blooming. It blossoms only in May for one week on the banks of the River Kentucky. I shall add two other new Genera rather akin but with yellow and blue flowers. They all belong to the Leguminose, suborder Lomentaria with free stamens, and natural family of Sophorides.

701. ZANTHYRSIS Raf. calix persistent campanul. equally 5dentate, petals 5 subequal cuneate obtuse, 1 narrower, 10 stamens subequal, pistil stipitate, podogyne villose longer than calix, ovary smooth terete curved, style very short, stigma acute, pod stipitate podogyne tomentose, pod falcate subterete, seeds . . *Tree with oddly pinnate leaves, no bracts, thyrsoidal yellow flowers*—This Genus is nearer Sophora than the last, but has some very peculiar characters, the name applies to the yellow thyrsus.

702. ZANTHYRSIS PANICULATA Raf. Virgilia

aurea Collins herb. not of Authors. Branches fuscate subangular and puberulent, leaves with many folioles sessile oblong obtuse nearly smooth concolor, petiols pubescent, panicle terminal foliose lax, peduncles 2-3 flore—South Florida and Cuba, a small tree, habit and leaves like *Amorpha* and *Virgilia*, folioles 21 to 25 half uncial. Flowers in a lax compound raceme forming a paniced thyrsus, small and yellow, half size of *Cladrastis*. The podogyne is very remarkable by its length and white hairs. I add for contrast the real *Virgilia aurea* of Africa.

703. *VIRGILIA AUREA* Lam. t. 326. f. 1. Wild. Pers. Poiret Sm. Dec. Shrub, leaves with many folioles petiolate elliptic obtuse smooth glaucous beneath, raceme simple with small lanceolate bracts, pods shortly stipitate oblong compressed reticulate, seeds lenticular—In Abyssinia in East Africa! thus totally unlike our American plant and having the characters of the African *Virgilias*, calix bilabiate, petals unequal, 2 cariniform, a short smooth stipes to the pod. Flowers golden, called white by mistake in Poiret.

704. *AGASTIANIS* Raf. *Virgilia*, *Sophora*, and *Broussonetia*! of Authors. Calix bilabiate, lips 2 and 3 dentate, petals 5 unequal, vexillum oval emarginate larger, 4 oblong biauriculate at base, 2 connivent cariniform. Stam. 10 unequal free persistent, pistil terete shortly stipitate, a style, stigma obtuse. Pod oblong tomentose convex on both sides. *Shrub with oddly pinnate leaves, flowers blue in simple racemes with bracts*—This fine shrub has been shuffled in several Genera, I deemed it myself

a *Cladrastis* in 1825, but am now convinced that it is really a peculiar Genus as deemed by Ortega; but his name of *Broussonetia* had been employed, mine means *remarkable blue*.

705. *AGASTIANIS SECUNDIFLORA* Raf. *Broussonetia* do. Ort. dec. 7. *Virgilia* do. Cav. t. 401. Pers. Sm. *Sophora* do. Dec. Branches angular, leaves with 11-15folioles subsessile oval smooth rigid, petiols swelled at base, racemes tomentose secundiflore, pedicels with 3 bracts, 1 at base, 2 beneath the calix—Mexico and Texas, a pretty shrub with handsome blue flowers, the vexillum or large petal pale blue. Decandole says the pods are moniliform as in *Sophora*, but he did not see them: even if they are the calix and petals are different from the real *Sophoras*, still more so from those with 4gone or monosperm pods that must form the Genera *Gonondra* and *Aplenda* Raf. 1815, and fl. tel.

MONOGRAPH OF CHIONANTHUS.

This Genus of the Fraxinides family is very near to the *Ornantes*, differing only by a drupe for fruit and simple leaves. Linneus had only Ch. *Virginica* of N. Amer. some presumed varieties were since noticed, but I have been able to ascertain 6 species quite distinct, although forming a very natural Genus; called vulgarly Fringe trees: they are all small trees, with handsome panicles of vernal white flowers, and opposite leaves quite entire. The Sp. of South America and Ceylon &c must be examined again and will probably form peculiar subgenera if not Genera. *Mayepea*, *Linociera* and *Thouinia* must be restored. All our Sp. have a small 4fid calix, 4 linear petals and 2 stamens not 4 as *Mayepea*.

706. *CHIONANTHUS MARITIMA* Raf. Virg. L.

&c. var. *marit.* Pursh Eat. Beck. Branches terete fuscate pubescent, leaves petiolate obovate elliptical membranaceous obtuse or acute pubescent beneath, panicles multiflore lax, bracts ovate and oblong, peduncles mostly triflore, calix unequal, fruits elliptical purple—A small tree 10 to 30 feet high, growing near the sea shores or near streams of the littoral region from New Jersey to Florida, leaves 3 to 4 inches long, commonly obovate, sometimes elliptical, panicles with many large flowers. Var. *rhombifolia* Raf. leaves elliptic rhomboidal, base acute, end obtuse, bracts lanceolate. In Delaware,

707. *CHION. OBOVATA* Raf. *domingensis?* Lam. Quite smooth, branches terete whitish with round warts, leaves subsessile obovate rounded, base acuminate, apex very obtuse, panicles cymose pauciflore lax, peduncles biflore rigid divergent, bracts obovate sessile, calix unequal, fruits ovate acute—Hills of Alabama, large leaves 4 to 6 inches long, quite round at the end, firmer and broader than in the last, fewer flowers. Probably also found in the Antilles and Florida.

708. *CHION. HETEROPHYLLA* Raf. *virginica* Mx. Leaves petiolate obovate acute or elliptic acuminate or ovate lanceolate pubescent beneath, nerves rufous, panicles lax pauciflore, bracts sessile ovate or oblong, peduncles 1-3 flore, calix subequal, fruits ovate subacute—Appalachian and Wasioto Mts. medial between *Ch. maritima* and *montana*.

709. *CHION. MONTANA* Raf. *virg. L. var. mont.* P. B. E. Branches smooth pale angular rugose with oblong warts, leaves firm sub-

sessile ovate lanceol. acute at both ends, glaucous beneath and smooth, nerves fuscate hardly puberulent, panicles multiflore compact, peduncles triflore, bracts ovate or oblong, calix equal, fruits oval.—Alleghany and Apalachian Mts. from Virginia to Georgia, a small tree 4 to 10 feet high, leaves 3 to 4 inches long. The warts are singular oblong with a fissure.

710. CHION. LONGIFOLIA Raf. Branches subangular pubescent fuscate, leaves subpetiolate, oblong lanceol. undulate acum. at both ends, nerves fuscate pubescent, racemes simple elongate pauciflore lax pubescent bracts elliptic, peduncles filiform 1-2flore, calix equal—Louisiana and Texas, leaves 6 to 8 inches long, about 2 wide, flowers rather smaller than in the others: fruits not seen.

711. CHION. ANGUSTIFOLIA Raf. *virginica*? Elliot. *virg. angustif.* Ait. Quite smooth, branches pale subangular with flat ringed warts, leaves petiolate lanceolate acute or acuminate glaucous beneath, panicles lax pauciflore, bracts ovatooblong, peduncles mostly triflore, calix subequal elongate—Carolina and Florida, a very distinct Sp. by leaves very narrow, 3 to 4 inches long, but hardly one broad, flowers small, fruits globular. Very peculiar warts on the stem round flat with a circular concentric furrow. Shrub 3 to 10 feet high (Elliot.) Var. *cylindrica* Elliot, with long cylindrical multiflore panicles.

712. FORESTIERA Poiret 1811, *Bigelowia* Smith 1821 not of Raf. 1817. *Adelia* Brown and Michaux not of Lin. *Borya* of Willdenow and Persoon, not of Labillardiere and Poiret. See my article *Adelia* in first part;

I have since ascertained that *Forestiera* was the first unemployed name given to this Genus by Poiret, and must be adopted by all correct Botanists ! This Genus thus made ambiguous in name is also somewhat doubtful in characters, because the dioical flowers are difficult to examine: it contains probably many species as these shrubs are unnoticed unless met in bloom. They are very near to *Fraxinus* by the flowers, and *Chionanthus* by the fruit, and simple opposite leaves: Thus evidently of the same natural family. But like *Fraxinus* they include several subgenera, that ought perhaps to be Genera, and I will consider them as such in order to distinguish them better.

713. *FORESTIERA* Poir. Raf. Dioical, calix 4 parted persistent, 2 or 3 anthers on a single central filament. fem. fl. calix 2 or 4 parted unequal, no corolla. one pistil with style and bilobe stigma. Fruit a berry drupaceous one seeded, seed cartilaginous sulcate or rugose. *Shrubs with commonly entire opposite leaves and lateral sessile flowers.* This includes most of the species; but they must all be examined again, in bloom.

714. *CARPOXIS* Raf. (sharp fruit) Polygamous? Calix 4parted Stamens 4 inserted in the calix (Elliot,) calix with a 5th smaller segment outside and more than 4 stamens, each on a filament. Fem. fl. ternate on fascicled peduncles, no calix, pistil oblong, no style, stigma sessile acute. Drupaceous berry oblong acuminate, seed sulcate. *Shrubs often thorny, leaves &c as in Forestiera.* I have followed the figure of Michaux which shows almost a polyandrous flower? and the whole quite different from the others. Elliot justly doubts the

genus of his Shrub ; it must be evidently a peculiar one near to *Nudilus* and some *Ilexides* to be compared, as well as my Genus *Nestronia* 503.

715. NUDILUS Raf. fl. tex. 1. in Atl. J. 176 and Herb. Raf. Dioical, male fl . . . fem. fl. no calix nor corolla, pistil ovate, a long style, stigma capitate. Drupaceous berry ovate one seeded. *Shrubs with opposite or subalterne leaves, flowers lateral peduncled.* This is the only Genus I have been able to examine alive, and I only met the female flowers, which have really no calix as in some *Fraxinides*, whence the name of *Nudilus*. I shall now enumerate 12 species belonging to those 3 Genera, altho' our botanists have only 3 or 4, Elliot and Eaton only two.

716. FORESTIERA LIGUSTRINA Poiret, *Adelia*, *Borya*, *Bigelowia* of Authors. Leaves thin subpetiolate lanceolate oblong entire, fruits ovate—In Illinois and Tennessee, habit of *Ligustrum*, only found by Michaux, not in Elliot nor Eaton, not seen by me.

717. FORESTIERA DISTICHA (or *heterophyla*) Raf. *Borya distichophyla* of Nuttall. Quite smooth, branches divergent subterete levigate grey, leaves distichal subsessile thin entire, margin scabrous, uninerve, the lower ovate, the upper lanceolate or oblong acute, bud scales acuminate pungent—found by Nuttall in East Tennessee on the banks of Frenchbroad River. My specimen is from him in Collins Herb. A tall shrub 12 to 16 feet high, leaves small uncial or less. Flowers and fruits not seen.

718. FORESTIERA VERRUCOSA (or *glaucosa*) Raf. Branches terete verrucose, leaves petiolate coriaceous glaucous entire obtuse elliptic or suboboval, base acute, fruits fasciculate peduncu-

late oblong obtuse—found in Florida by Dr. Baldwin and mistaken for *F. ligustrina* by Collins altho' nearer *F. porulosa*. The warts are remarkable similar to those of some *Chionanthus*, unequal oblong flat rimose, the leaves are uncial quite glaucous on both sides, slightly reticulate and with no pores beneath, but a few scattered white small warts or dots, probably an *Aecidium* or parasitical fungus; the berries are similar to Barberries as long as the peduncles, and dark purple.

719. FORESTIERA PORULOSA Poiret. *Adelia* do Mx. Borya do W. P. Elliot. Leaves coriaceous sessile oval lanceol. obtuse, margin revolute entire, beneath porulose punctate and rusty—Sea shore of Florida, flowers and fruits not seen, even by Elliot.

720. FORESTIERA CUNEIFOLIA Raf. Branches rugose subangular, leaves petiolate cuneate lanceol. acute entire smooth, a single rufous nerve, fruits lateral subternate naked ovate acute subsessile—Discovered in fruit by Dr. Ward on the banks of the Wabash, seen alive without flowers. It may be a *Nudilus* or something else, altho' quite near *F. ligustrina*, but leaves quite cuneate and often alternate, uncial, neither coriaceous nor membranaceous.

721. FORESTIERA CASSINOIDES Poir. *Adelia* Br. t. 36. Borya W. P. &c. Leaves petiolate oblong obtuse coriaceous smooth, margin revolute, beneath reticulate—Antilles and South Florida.

722. FORESTIERA (or Carpoxis) NITIDA Raf. Borya do Loud. Cycl. Leaves opposite and alternate ovate acute serrulate shining—This and the two next, I only find noticed in Loudun Cyclop. of plants, who does not quote his Authorities, but given them as North American.

They may be of a different Genus and approximate to Carpoxis by the leaves not quite entire.

723. FOREST. (or Carp.) PRINOIDES Raf. Borya Loud. Leaves ovate lanceolate serrate—Is it *Ilex prinoides*? flowers green, leaves $2\frac{1}{2}$ inches long, one broad.

724. FOREST. (or Carp.) RETUSA Raf. Borya Loud. Leaves alternate tapering in short petiols, retuse emarginate mucronulate very smooth glaucous.—Very near to my *Ilex retusa* but that is a real *Ilex* with 4seeded berries.

725. CARPOXIS SPINOSA Raf. *Adelia acuminata* Mx. ic. 48. Borya W. P. &c. *Bigelowia* Sm. Branches spinose, leaves petiolate, rhomboidal, lanceolate, serrate (entire in the figure) acute smooth, fruits subternate drooping oblong rostrate acuminate—Carolina and Georgia, margin of streams, the description and figure of Michaux do not agree, and Elliot Sp. appears distinct. Leaves uncial, fruits long on filiform peduncles. Stamens over 4?

726. CARPOXIS INERMIS Raf. Borya acuminata Pursh, Elliot &c. Branches not spinose, leaves oval lanceol. attenuate at both ends petiolate membranaceous serrulate—Carolina, only seen dry by Elliot, who says that it has really 4 stamens.

727. NUDILUS PARADOXUS Raf. fl. tex. &c. Quite smooth, branches terete, leaves opposite and altern. lanceolate sessile acute entire fasciculate, fem. fl. peduncled racemose 2-4flore—from West Kentucky to Texas, very rare, a small shrub 3 to 5 feet high, flowers small vernal before the leaves, which are uncial rather thin and commonly alternate, berries ovate black? but not seen ripe.

728. FRAXINUS Lin. and all Authors. This Genus ought to follow the last, and I could

give a Monograph of 32 Species at least, while our Authors have only 7 or 8; but Bosc and Loudun have noticed 27 North American Sp. while Willdenow and Persoon had only 10. However I have but a dozen Sp. in my Herbarium often without flowers or fruits, and I must delay this labor; when I will easily prove that this extensive Genus must be divided into 5 Genera at least, and I am now going to establish them.

729. *FRAXINUS* Raf. all the Species with naked flowers, without calix as in *Nudilus*, 2 stamens, and fruit a winged samare. *Leaves pinnate, flowers paniculate polygamous.*

730. *LEPTALIX* Raf. Those differing by a small calix 4dentate &c. Such as *Fr. caroliniana, acuminata, pubescens, juglandifolia* and many other American Sp. but Bosc has not noticed this important character.

731. *ORNANTHES* Raf. 1815. *Ornus* P. Pursh, B. E. &c. Quite different by having not only a calix, but also a corolla of 4 petals as in *Chionanthus*.. *Ornus* being the root of many names I changed it to *ORNANTHES* meaning the flowering Ash: 3 Sp. at least *O. rotundifolia, mannifera* and *Americana*.

732. *APLILIA* Raf. Flowers and fruits to be examined and described, leaves simple. Probably more than a subgenus. Two Sp. at least. *A. macrophyla* and *laciniata*, the *Fr. simplicifolia* of late Authors.

733. *SAMARPSES* Raf. A minute tridentate calix, stamens 3? Fruit a peculiar samare obovate with 3 wings like *Halesia*, seed triangular. *Leaves pinnate*—This must constitute a very peculiar genus, the flowers must be better described.

734. *SAMARPSES TRIPTERA* Raf. *Fraxinus* do

Nuttal, Elliot. Folioles about 7 obovate entire subsessile oblique, villose and pale beneath, nerves smooth—In the Oak forests of Carolina.

APPENDIX.

I must conclude here this third part of my New Flora and first of my New Sylva, not being able to include in it all our New Trees and Shrubs as I expected, owing to the need I had to enlarge my labors by illustrations and monographs of compared or revised Genera and Species of Trees and Shrubs. Another part shall be required for this New Sylva ; since I have only revised one half of what I intended. In the prolific Genera *Quercus*, *Salix*, *Populus*, *Betula*, *Hicoria*, *Kalmia*, *Mimosa*, *Magnolia*, *Illicium*, *Azalea*, *Ribes*, *Rubus*, *Calycanthus*, *Tilia*, &c. I have few additions to make, and I have already illustrated elsewhere the *G. Vitis*, *Rosa*, *Abies*, *Aker* &c. But there is nevertheless a number of Genera as yet untouched that require revision or additions—such are—*Andromeda*, *Vaccinium*, *Rhamnus*, *Ilex*, *Viburnum*, *Lobadium*, *Aesculus* and *Pavia*, *Prunus* and akin *Cerasus*, *Padus* . . . The *Coniferes*, *Pomiferes*, *Hypericines*, *Malvaceous* . . . and also *Myrica*, *Nyssa*, *Fraxinus*, *Artemisia*, *Lantana* . . . besides all our *Palms*, *Yucas*, *Smilax*, *Zamia*, *Cactus* and *Upuntia*.

Several of our small Genera are pretty well settled, such as *Olea*, *Catalpa*, *Callicarpa*, *Ptelea*, *Pinkneya*, *Staphylea*, *Fothergilla*, *Dirca*, *Menziesia*, *Mylocarium*, *Bejaria*, *Illicium*, *Hopsea*, *Halesia*, *Corylus*, *Carpinus*, *Platanus* . . . But others have great additions or improvements to receive, for instance *Clethra*, *Aralia*, *Asimina*, *Chiococca*, *Cyrilla*, *Itea*, *Sambucus*,

Berberis, Arbutus, Myrtus, Ficus, Avicennia .

There is also a number of new or rare Trees and Shrubs discovered in Florida and described by Bartram 50 or 60 years ago, that are not yet received by our supine Botanists—others of Robin desc. in 1802, described 1807 and by me again in 1817 in *Florula Ludoviciana*, are yet quite neglected by them—Even those few noticed or well ascertained by Lewis and Clarke 30 years ago, in *Orion*, are hardly known. All these ought to have been long ago added at least as Synonyms or in an Appendix to our Botanical Works, and I mean to do so, unless introduced by me in the proper monographs; I will now add here the names of the most remarkable among them.

Among Bartram's Trees or Shrubs of Florida were *Nyssa coccinea*, *Lycium salsum*, *Corypha repens* and *obliqua*, *Areca floridana* R. (*Corypha palma* B.) *Erythrina corallo-dendron*, *Magnolia fragrans* and *acuta* Raf. and several Sp. of Michaux long before him, *Quercus incana* and many others, many Sp. of *Azalea*, *Aesculus*, *Myrica*, *Lantana*, *Prinos*, *Andromeda* . . . also *Cupressus purpurea* Raf. *Rhizophora conjugata*, *Agave vivipara*, *Carica papaya* or *floridana* Raf. . . Besides several new Genera, my *Xiphodendron*, *Nestronia*, *Sclerotriss*, *Piloblephis* &c.

Among those of Lewis and Clarke are my *Sorbus pumila*, *Sambucus ceruleus*, *Juniperus radicans*, *Betula rupestris*, *Pinus humilis* and *macrocarpa*, *Pyrus fuscata* . . . besides several Sp. of *Cactus*, *Ribes*, *Vaccinium* . . . and all my new Firs see *Abies*.

Among those of Robin and Louisiana to be admitted in our *Sylva*, are my *Laurus ludoviciana*, *Fraxinus discolor*, *undulata* and *lacera*, *Arbutus obtusifolius*, *Cornus polygama*, *Ascyrum grandiflorum*, *Hypericum rostratum* and *fulgidum*, *Tilia stenopetala*, *Frangula fragilis*, *Prunus stenophyla*, *Gleditsia heterophylla*, *Ptelea tomentosa*, *Hicorius integrifolia*, *Cassine ramulosa*, &c . . . Besides my *N. G. Chimanthus*, *Adnaria*, *Diplonix*, *Pseudopetalon*, *Philostemon* . . . all described since 1817!

We should look in vain for these Trees and Shrubs in the Works of our Compilers and neglectful Botanists. They will all be noticed again in my *New Sylva*, or given as synonyms when rectified.

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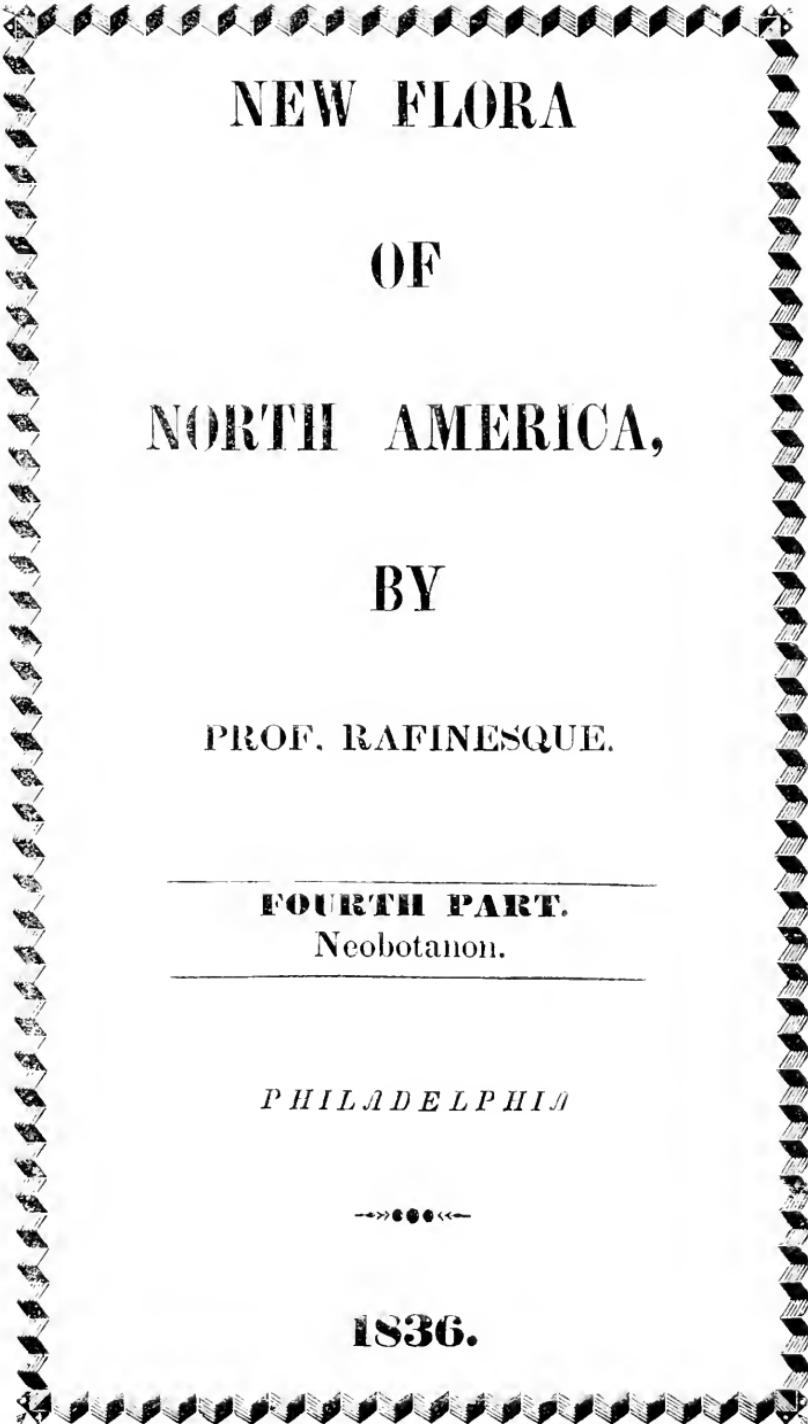
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BY
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FOURTH PART.
Neobotanon.

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1836.

NEW FLORA AND BOTANY

OF

NORTH AMERICA

OR

A SUPPLEMENTAL FLORA,

ADDITIONAL TO ALL THE BOTANICAL WORKS ON
NORTH AMERICA AND THE UNITED STATES.

Containing 1000 new or revised Species.

BY C. S. RAFINESQUE A. M. Ph. D.

Prof. of Botany, the Historical and Natural
Sciences, member of many learned Societies.

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*The floral wealth in this wide land concealed
Will be at last by learned care revealed.*

PHILADELPHIA.

1836.

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[1838]

FOURTH PART.

NEOBOTANON.

**NEW FLORA
AND BOTANY**

OF

NORTH AMERICA.

BEING A SUPPLEMENTAL FLORA,

To the various Floras and Botanical Works of Michaux, Muhlenberg, Pursh, Nuttall, Elliot, Torrey, Beck, Eaton, Bigelow, Barton, Robin, Hooker, Riddell, Darlington, Schweinitz Gibbs, &c.

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BY C. S. RAFINESQUE, A. M.—PH. D.

Prof. of Botany, the historical and natural sciences—
Member of many learned Societies of Paris, Vienna.
Bonn, Bruxelles, Bordeaux, Zurich, Naples, &c. and
in Philadelphia, New York, Cincinnati, Lexington, &c.

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PHILADELPHIA:

PRINTED FOR THE AUTHOR AND PUBLISHER.

1836.

NOTICE.

Botanists and Naturalists are informed that this work and nearly all my other works, manuscripts, figures, specimens &c now forming a long Catalogue in my Bulletins, may be had from me either sold and exchanged for their own works, if they are not too costly.—My published works extend besides Botany, to all the other branches of Natural History, American History, Monuments and Languages, Ethnography and Geography, Astronomy with Celestial and Biblical Philosophy ; Travels, Journals and Miscellanies &c.—The Catalogues are given or sent gratis.

The other works to be produced by myself gradually until 1840 and 1850, will also be numerous—my History of the American Nations before and after Columbus was suspended after two volumes were issued ; but shall now be resumed speedily, and the next volumes comprize the History of the Tsalagis or Cherokis.—Of the Tols, Chols, Chontals &c, and other Atlantic Nations of Central America.—Of the Muycas and other Nations of New Grenada.—Of the Nations of Austral America &c. These being some of the most obscure parts of American History, may become very interesting, and my researches will throw some new lights on those Nations, their origines, events and civilization.

INTRODUCTION.

To the Fourth and last Part.

I have already explained that the delay in the completion of this work, was mainly owing to the contemporaneous publication of my **FLORA TELLURIANA**, where I inserted the natural classification, main principles of natural Botany, and nearly 2000 new or revised Genera or Species (under 1225 articles) whereof many from North America likewise. I now conclude this work like the *Fl. Telluriana* in 4 parts, which will include over 1000 new Species with some new Genera, many revised Monographs &c; but yet this is merely one half of what I have ready to publish on our Flora, in order to correct the glaring errors and omissions of our Botanists.

Whereas Prof. Torrey has been at last induced to undertake a general Flora of North America, a task which I had suggested to him many years ago, I shall delay my future additions and corrections until after his Flora is published. I call it his Flora, although he hopes that Nuttall and others will help him, because he means to insert in it only what he has seen and ascertained, according to his own notions of Species and Genera, overlooking varieties and deviations of specific or generic Types; an error into which he has fallen in common with several other Botanists, who have reluctantly adopted the natural methods of Botany.—But time will rectify these absurd and obsolete notions, and as we now restore, adopt and value the labors, genera and varieties noticed by the fathers of correct or natural Botany, Adanson, Jussieu, Necker, Richard, Lamarck &c, those of

our modern IMPROVERS will be along with mine properly valued in due time—There is a tendency to resist improvements and neglect facts for awhile by the old schools of science, which are afterwards taken hold of by more liberal and enlightened teachers or pupils.

Therefore my own Flora and that of Torrey will not interfere in the least, but be supplemental to each other; while his labor will probably save me the trouble of writing many Monographs, or verifying many synonyms and quotations. When his Flora will be concluded, I shall have merely to publish my additions to it, in order to complete our real GENERAL FLORA, of all the plants actually known to me or others.

It is well known that notwithstanding the greatest industry and exertions, it is not possible for any botanist (or even a set of them) to collect or see all the plants of a vast region like our own: therefore there are many plants known only to myself or a few others; and if besides they are short sighted, or lack the botanical sagacity of ascertaining generic and specific characters, it may happen that they will overlook many such, even when met with in the woods or in herbals.

As I think that I am gifted with a peculiar sharp sagacity in discriminating Genera and Species of Plants and Animals, it behoves me to use it in order to rectify these objects and the sciences relating thereto.—It is what I have often done, am now doing, and will continue to do as long as I live, not being prevented by the sneer or neglect of any one, whom I consider less sagacious than myself, who cannot discriminate between the most conspicuous characters blended by the Linneists or modern Blenders and Shufflers.

One of my main future works will be a complete Sylva of North America on our Trees and Shrubs reduced to natural orders. Another on our Ferns &c. There will be much to do yet in all the botanical classes, before they be properly rectified and made permanent. There is an ample field of observations and researches in the vast regions extending from Florida to Texas, Origen and Boreal America, and containing more Gen. and Sp. than Europe; even excluding the Mexican and Tropical States till Panama, that afford a vegetation equally fruitful. Some of my future Monographs of the Genera or groups *Prunus*, *Plantago*, *Gentiana*, *Euphorbia*, *Vaccinium*, *Andromeda* &c will contain from 40 to 80 Species.

In this last part of my Supplemental Flora, I will chiefly describe some of the most select and rare plants or shrubs which I have in my Herbarium; they are all figured in my *Autikon* like the others.—And I can vouch that they are all as good and genuine Species as any of our modern botanists, and much better than one half of the linnean Species of old, often blending half a dozen; as in the Genera *Geranium*, *Lichen*, *Conferva*, *Agaricus*, *Aster*, *Euphorbia*, *Veronica*, *Justicia*, and 100 similar families rather than Genera, that included 10 to 50 Good natural Genera, comingled as men are comingled with the Monkeys, and Bats with Birds!!! by many ignorant men or pseudo-philosophers lacking the sagacity of perceiving distinctions of parts and forms.

NEOBOTANON

OR SELECTED NEW PLANTS &c.

DICOTYLES.

735. OTAMPLIS Raf. Dioical, perigone 6phyle, 3sepals internal narrower, male fl. 6 stamens monadelphous at base. Female fl. ovary single ovate, stigma sessile large capitate sublobate. Fruit a single monosperm berry? *Volute, leaves alternate, fl. axillary racemose*—Akin in habit &c to Menispermum, but not even of same family, lacking the multiple berries; it must form with *Pselium* of Loureiro another small family of plants, the PSELIDES distinct by single ovary and the stamens not opposed to equal petals. *Pselium* of Lour. Mart. Bosc, Smith, Decand. &c differs by Perigone with 4 sepals, 6 free stamens in male flowers, stigma 4fid. The *Ps. heterophyllum* is a twining shrub, with alternate entire leaves, growing in Anam of Asia. Otamplis derives from *Eared Vine*.

736. OTAMPLIS VITIFOLIA Raf. stem twining striate, leaves on long petiols palmate or lobed, 5nerved, glaucous beneath, base reniform, lobes acuminate entire, ovate in lower leaves, sinusses obtuse; racemes shorter than petiols subcompound.—A large herbaceous Vine, leaves quite smooth, lower ample 6 to 8 inches broad, petiols 8 to 10 inches long, upper smaller with 3 short lobes, racemes hardly over one inch long, flowers small geminate or ternate, whitish, sepals ovatoblong obtuse deciduous, the inner ones smaller and whiter. On Red River in Arkansas and Texas. My specimens are marked a N. G. akin to Menispermum in Collins Herbarium.

737. DIDIPPLIS Raf. 1833. Calix persistent campanulate 4fid, segments unequal acute. Corolla none. Stamens 2, filaments exerted, anthers rounded, stigmas 2 subsessile. Capsule globular bilocular polysperm. *Leaves opposite, flowers axillary sessile*.—A very distinct Genus blended with *Peplis* by Nuttall and Decandole, which has a calix 12fid and 6 stamens! the *Peplis indica* with spicate flowers, calix 8 dent. 4 stamens &c, is also a peculiar Genus **NEXILIS** Raf. meaning *not with 6*, while *Didipplis* means *two doubling*.

738. DIDIPPLIS LINEARIS Raf. atl. J. and flora tex. 16—*Peplis diandra* Nuttall in Dec. prodr.—Stem terete ramose, leaves sessile proximate decussate patent linear obtuse uninerve, flowers sessile solitary axillary.—An aquatic plant of Red River, Texas and Arkansas, habit of *Callitriche*, leaves narrow elongate uncial, flowers small green. In Collins Herb. it was marked a N. G. near *Lythrum*.

739. DIPHYLEIA CYMOSA Mx. This fine plant seen by few, is so rare that its existence was doubted by some of our skeptics, notwithstanding the two fine figures of Michaux. It is a vernal plant of the Unaka and Cherokee Mts. where few botanists have dwelt or travelled. My specimen in Col. Herb. was collected by Lyons, and is in fruit, the angular stem has only one leaf 6 inches broad, very angular but hardly dentate, the cyme is trifid and ramose, berries subovate obliquial. If it is a deviation it may be called *var. trifida*.

740. DISCOPLIS Raf. Dioical, male fl . . . female fl. calix persistent oval hirsute 4dentate, ovary sessile sub4gone warty, stigma sessile large sulcate. Fruit inclosed in calix, indehis-

cent Akenæ or nut bilocular disperme, outside compressed discoidal rugose, 2 sides compressed sulcate, edges echinate, integument thick and hard, 2 oblong seeds inside. *Herbaceous, leaves opposite, flowers in slender spikes*—a most singular N. G. with very peculiar fruit, probably akin to the EUPHORBIDES, or rather TRAGIDES, but the male flowers are required to ascertain positively the natural affinities, perhaps even a typical Genus if they have 4 stamens inserted on a similar calix. The name means *discus armed*.

741. DISCOPLIS SERRATA Raf. stem weak 2-3chotome flexuose smooth, leaves remote petiolate ovate serrate acute; spikes terminal filiform, bracts oblong longer than short peduncles.—From South Florida and Cuba, my specimens one foot high collected by Kin, stem fuscate, leaves acute at both ends yet subdeltoid and even sometime subcordate, some white hairs scattered above, spikes subracemose naked slender 3 to 4 inches long, with minute bracts, flowers small subsessile, the lower ones commonly abortive, remote and green, quite hairy.

742. PLANTAGO MULTINERVIS Raf. Scapose, leaves petiolate subpilose broad lanceolate, attenuate at both ends, remotely dentate 9 nerved; scape longer sulcate hirsute, spike elongate, flowers scattered or interrupted, flowers smooth, calix carinate, bracts subequal ovate acute, style elongate persistent—found in Florida by Kin (Col. Herb.) near to *Pl. interrupta* which differs by entire leaves, with few nerves, shorter leaves and flowers, short bracts, calix not carinate &c . . . Here the leaves are 6 to 8 inches long, nearly 2 broad, spikes 6 to 10 inches long. Capsule disperme.

743. *PLANTAGO ALBIFLORA* Raf. scapose, leaves petiolate ample ovate, acute at both ends base repand dentate, 7nerved, very smooth; scape longer striate subpilose below, spike elongate imbricate, at base subverticillate, flowers smooth, calix and bracts scarioso oblong acute, style elongate persistent pubescent.—In West Kentucky and Tennessee, leaves 6 to 8 inches long 3 to 4 broad, subglaucous, spike very long pedicel, calix whitish scarioso with a green nerve. Akin to *Pl. cordata* but not at all cordate.

744. *PLANTAGO TEXENSIS* Raf. Scapose, silky pilose, leaves elongate sessile linear obtuse hardly trinerve, scapes equal or longer terete, spike ovate and oblong dense imbricate, bracts and calix ovate obtuse villose, segments of corolla rounded concave, capsule disperme, seeds elliptic concave.—A very distinct sp. of Texas and Arkansas, leaves semipedal, broader above, spikes from half inch to two inches long.

745. *PLANTAGO LINEARIS* Raf. Scapose, leaves sessile linear elongate entire quite smooth obtuse trinerve rugose; scape terete pubescent above, spike oblong dense, bracts linear triple of flowers, calix oblong obtuse.—In Florida, found by Baldwin or Kin, nameless in Coll. Herb. Perennial as most sp. leaves 2-4 inches long, bracts remarkably long, spike short uncial.

746. *PLANTAGO GLOBOSA* Raf. Scapose, leaves sessile lanceolate uncial, base wooly, entire uncial, scapes longer filiform sulcate, spike globose minute dense, bracts and calix scarioso fulvous ovate acute.—Small, akin to *Pl. indica* and my *Pl. atrofusca*, leaves seldom over one inch, scapes 2 or 3 inches long, spike quite capitate very small as in *Pl. indica*. From South

New Jersey to Florida in sandy soil, near Sea Shores.

747. *PLANTAGO AMBLODES* Raf. Scapose, leaves subsessile uncial oblong cuneate ?trinerve large obtuse teeth, margin and nerves ciliate ; scapes hardly longer pubescent angular, spikes oblong densiflore pubescent, bracts equal ovate acute—Another small sp. from the banks of Arkanzas and Yazou Rivers. Some leaves are subpectinate by elongate teeth.

I have described above 6 of my most distinct sp. of this Genus, 2 others *Pl. gonophylla* and *atrofusca* of Illinois are in Atlantic Journal page 150 ; but I have in my Herbarium a crowd of other N. Sp. and varieties, some of which are blended with *Pl. cordata*, *media*, *lanceolata*, *major* &c of our botanists ; when I shall prepare a Monograph of this G. they shall be distinguished. I have called them *Pl. elliptica*, *compressa*, *crassifolia*, *undulata*, *repanda*, *retundifolia*, *riparia*, *longipes*, *pycnanthes*, *pauciflora*, *pilosa*, *brevifolia*, *breviscapis*, *eriorhiza*, *serpentaria*, *peregrina*, *balduini*.

748. *LITTORELLA FLEXUOSA* Raf. This G. was not deemed American, and this sp. will form perhaps a N. G. when examined alive ; it is at least a subgenus, which I call *XAMOTRIS* (dwarf raceme) and it differs by *calix unequal*, *imbricate segments of inner perig. or corolla also unequal*. Habit *scapes racemose without bracts*.—Scapose, leaves cespitose linear obtuse falcate smooth, base wooly, entire or with a few scattered gashes, uninerve ; scapes shorter flexuose racemose pauciflore—Sent me from Alabama and found in Arkanzas by Nutt. deemed by him a nameless *Plantago* in Coll. herb. annual, leaves 1 or 2 inches long narrow,

scapes with 5 to 7 flowers on long pedicels, calix lanceolate acute, segments of corolla linear acute, 3 or 4 as in *Littorella*, some flowers geminate.

749. *RIVINA* OR *PIERCEA ACUMINATA* Raf. *Riv. levis* of Mg. and Nut. in Col. Herb. not of Antilles nearer to *brasiliensis*!—Herbaceous smooth, stem branched sulcate, leaves ovate oblong acuminate base rounded, margin subrepand; racemes axillary erect longer than leaves—From Florida to Arkansas, 2 or 3 feet high, leaves 3 inches long thin and petiolate, racemes 4 to 6 inches long, flowers white, sepals of perigone 4 ovateoblong obtuse persistent and greenish after anthesis, stamens 4 or isopere as in the real *G. Piercea* of Miller, see my fl. tellur. 635, *Rivina* having 8 or 12 stamens. Habit like *Phytolaca* but berries globular one seeded, types of Nat. Family *RIVINIDIA* fl. tel. 634.

750. *RIVINA* OR *PIERCEA OBLIQUATA* Raf. *Riv. humilis* of some Am. bot. not of Antilles—Herbaceous nearly smooth stem simple sulcate, leaves ovateoblong subrepand, base commonly obliquial, end attenuate obtuse and mucronate, petioles somewhat pubescent, racemes erect equal to leaves.—Several sp. have been blended in *R. humilis*, this is quite distinct, found in Florida by Baldwin; a small plant hardly pedicel, leaves smaller 1 or 2 inches long, pubescence extending sometimes to nerves and racemes, these short with fewer and smaller flowers, sepals of calix linear oblong obtuse whitish, style elongate, stig. capitate—as our botanists have mistaken these two plants (they are not in Elliot) it may be needful to state that the real *R.* or *P. humilis* is frutescent quite pubescent, not sulcate, with acuminate leaves and larger

red berries.—While *R.* or *P. levis* has stem terete, leaves not repand marginate of red, and flowers redish also with obovate sepals.

751. *PLUMBAGO FLORIDANA* Raf. (Collins herb) stem slender virgate angular, smooth, leaves minute ovate acute, spike slender base squamose denudate, flowers terminal few, bracts ovate reflexed, calix with stipitate glands.—This *G.* was not known to be N. American, the specimen of Collins was collected by Ware in East Elorida, it is pedal, with small leaves and flowers less than one inch long.

752. *MELOTHRIA NIGRA* Raf. 1820, An. nat. 112. *M. pendula* E. and most of our Authors, stem. filiform angular trailing, leaves roughish subreniform 5lobed remotely denticulate, petiols filiform elongate, flowers polygamous and monoical, peduncles uniflore, in the male multifi. berries globular smooth, pisiform black.—From Carolina to Kentucky, trailing 3 to 10 feet, leaves and flowers small, these yellow. It has several var. see my Monographs; but all are distinct from the *M. pendula* of Antilles, Linneus said that sp. grew from Canada to Jamaica, but I never found it in the Northern States, others have and ascribe to it a red berry, is it another sp. or the next? In this the berries are shining black scarcely larger than a pea.

753. *MELOTHRIA REPANDA* Raf. Stem sulcate twining, leaves thick roughish cordate 5angular subtrilobe, repand sinuate, teeth obtuse mucronate, peduncles uniflore, berries oblong oliveform smooth.—This is most likely the sp. of Linneus and many botanists, although L. ascribes an oliveform tuberculate berry to his, petiols shorter than leaves and peduncles, I cannot say if the berries are black or red, my spe-

cimen is from Arkansas.

754. **MELOTHRIA PUNCTATA** Raf. stem filiform angular, leaves cordate 5angular smooth entire or subdentate, thin glaucous with minute black dots on both sides, petiols equal to leaves filiform ; peduncles uniflore, berries red elliptic oliveform smooth—sent me from New Orleans by Dr. Riddell as the *M. pendula*, the dots appear black glands as in *Hypericum*, berries apparently red in the specimen, shape and size of a barberry.

755. **MELOTHRIA PENDULA** (or *edulis*) L. Brown, Lunan. Sw, and Antillian Authors.—Scandent. petiols auriculate or alate, leaves rough trilobe or triangular subcordate sinuate, obtuse, fl. polyg. dioical, peduncles uniflore, berries pendulous ovate black size of a nutmeg. In Jamaica and the Antilles, totally unlike the two others, fruit very large eaten when ripe and pickled unripe says Lunan, probably also in Florida and cultivated in Louisiana.

756. **RIDDELIA** Raf. family Cleomides—calix 5 sepals subequal, petals 5 unequal, stamens filiform short, commonly 5 subequal inserted on a flat disk, ovary sessile oblong, stigma sessile obtuse. Pod sessile, linear compressed bivalve polysperme bilocular, partition contrary to valves, edges thick flattened. *Fru-tescent, leaves simple stipulate, alternate flow-ers, extra-axillary solitary*.—Another pretty G. of the family CLEOMIDIA, which now contains 25 at least, (see my reform of it ;) this is remarkable by habit and fruit near to the G. *Peritoma*, *Warea*, *N. Podolobus* R. or *Stanleya* N. &c but distinct from all these, yet they all belong to my family of CLEOMIDES, not a section of CAPPARIDES. Dedicated to Dr. John

Riddell who sent it to me from New Orleans as an unknown G. with several other rare plants, he is the author of a Western Flora and discoverer of many new plants there. If his name has been employed already, we may substitute *ANTIPHYLA SERRATA* Raf.

757. *RIDDELIA ANTIPHYLA* Raf. Leaves smooth lanceolate acute, equally serrate, petiols short pubescent, stipules subulate; peduncles extraxillary unifl. equal to petiols, sepals colored linear lanceolate acuminate pubescent, petals subequal cuneate obtuse, pod divergent strait equal to leaves—apparently a virgate shrub, branches fuscate terete rimose, leaves and pods uncial, almost opposite to each other, flowers yellow small, stamens 5 or 6, shorter than flowers. Pods fuscate smooth, seeds black compressed squared truncate.

758. *SESUVIUM VERRUCOSUM* Raf. prostrate roughened by warts, leaves thick petiolate obovate and cuneate obtuse entire, flowers axillary subsessile commonly solitary—a very distinct sp. with the habit of *Portulaca oleracea*, but entirely covered with rough tubercules and warts, when dry of a fulvous glaucous color all over, many branches, leaves small, flowers 1 to 3 in the axils, campanulate, white inside, stamens many, and thus totally unlike the *S. pentandrum* of Elliot which is my G. *Squibbia maritima*. This sp. was sent me from Arkansas and the Chacta Conntry, where it grows near streams on the Yazou and Salt River.

759. *SPERGULA FALCATA* Raf. Diffuse decumbent smooth glaucous, leaves linear falcate acute, base connate, peduncles axillary equal to internodes and leaves, erect, segments of calix ovate obtuse equal to petals and capsule.—On

the banks of the lower Ohio, and Missouri rivers, a small plant extending 3 to 6 inches with many short branches, leaves 3 lines long.

760. *DIONEA SESSILIFLORA* Raf. atl. J. 78. Petiols winged oblong or cuneate narrow, acute at both ends, leaves bilobe; flowers sessile aggregate 3 to 5, bracts lanceolate.—The beautiful *G. Dionea* is no longer monotype but has deviated sp. *D. muscipula* the type is quite distinct from this by petiols broadly obcordate, flowers corymbose. Seen alive in our gardens as well as a variety *Uniflora*, smaller uniflore, with broader shorter leaves, petiols oblong acute winged. Both native of Carolina, flowers white estival, leaves irritable in all. This *G.* is the type of a Nat. Family *DIONIDIA* different from *ALSINIDIA* by single style.

BORAGINES

761. *PULMONARIA ELLIPTICA* R. leaves elliptic acute at both ends, the radical on very long petiols, upper ovate; flowers axillary pedunculate nodding, calix with short segments lanceolate acute.—In the Apalachian Mts. of Virginia and Carolina, stem smooth branched bipedal, flowers blue and small.

762. *LITHOSPERMUM GRACILE* Raf. annual, silky villose, stem slender erect virgate naked below, leaves petiolate linear acute adpressed, flowers terminal subsessile, tube of corolla longer than calix, segments of corolla oblong obtuse.—A very striking sp. sent me from Alabama and found on Red River Arkansas and Texas by Nuttall in Collins herb. where noted as perhaps a *N. G.* but I see no difference, unless the fruit be different, the corolla is really funnel shape, but the lobes deeper or longer. Stem semipedal nearly simple, leaves uncial

sometimes revolute on the margin, flowers terminal axillary white and small.

763. LITHOSPERMUM STRIGOSUM Raf. quite warty strigose, leaves sessile ovatoblong, fl. axillary sessile, calix lanceolate rugose verrucose strigose, seeds fuscate obovate.—In Florida, found by Kin, my specimen is only in seed, pedicel covered all over with white warts ending in a white rigid hair forming a great roughness, leaves uncial rigid, calix large unequal.

764. LITHOSPERMUM CUSPIDATUM Raf. stem erect ramose sulcate hirsute, hairs spreading, leaves linear lanceolate cuspidate rugose ciliolate hirsute rough; flowers axillary solitary, subsessile, seeds smooth lucid ovate fulvous not punctate.—In Alabama and Georgia, pedicel, leaves uncial narrow, branches short erect angular. Very different from *L. angustifolium* Mx.

765. LITHOSPERMUM CILIATUM Raf. annual erect subdichotome above, hardly hispid, leaves sessile linear obtuse ciliate, flowers axillary subsessile, segments of calix linear ciliate as long as corolla.—Found by Hart on Red River and by Drumond in Texas, semipedal slender few leaves, flowers subracemose.

766. LITHOSPERMUM FLORIDANUM Raf. annual erect ramose canescent, hairs adpressed, stem terete, leaves linear lanceolate acute, flowers subracemose, calix equal to tube of corolla, seeds pilose.—In Florida much branched, leaves rather lax patent, linear on the branches, flowers chiefly pedunculate, but some sessile, with or without bracts, segments of calix more unequal than usual, lobes of corolla obovate, seeds yellow pilose globular.

I have thus added 5 sp. to this G. which had already 7 in Eaton, but some of these do not be-

long to the Genus, the *L. latifolium* forms my *G. Cyphorima* 1819 having 5 pits outside of the mouth of corolla, with 5 corresponding knobs inside.

767. *BATSCHIA ALBIFLORA* Raf. annual, glaucous, hairs all over white adpressed, stem simple, leaves petiolate ovate acute, flowers few terminal, tube of corolla equal to calix. limb campanulate large plicate hardly lobed.—On the River Arkansas on sand bars found by Nuttal, deemed a *N. G.* but quite like *Batschia* although habit a little different and corolla less lobed, if a subgenus it may be called *ONOKILES* a Grecian name of *Anchusa*. Pedal, first leaves opposite, small hardly uncial, flowers few large.

768. *LYCOPSIS? AXILLARIS* Raf. stem flexuose angular, leaves sessile linear lanceolate slightly scabrous and pubescent, flowers axillary sessile, calix villose tomentose canescent—Found in Florida by Mr. Ware, marked a *Lycopsis* in Coll. herb. but habit rather of *Lithospermum*, small plant, leaves elongate, over one inch long. Very different from *L. virginica*.

UMBELLIFEROUS PLANTS.

769. *MESODISCUS* Raf. dioical involucre 1 or none, involucels 2, male fl. with a thick lenticular disk convex central, no calix! no style! petals 5 obcordate, stamens 5 equal to petals, anthers globose bilobe, female fl. and seeds unknown. . . . *Leaves commonly ternate, flowers white.*—Very singular Genus, perfectly dioical, which appears a paradox in this family of plants: several *G.* however are polygamous. Although the fruit is lacking yet this Genus appears perfectly distinct and unlike any other except the next. I have 2 sp. of it, one of which is anomalous again by a triple compound umbel.

770. MESODISCUS SIMPLEX Raf. stem terete solid base subangular few leaved, leaves remote, petiols angular, folioles 3 entire oblong or lanceol. acute, middle one acuminate; umbel single involucre none, involucels 2 setaceous, 7 umbellules 9-12flore, pedicels unequal, petals obcordate concave.—Sent me from Alabama, stem slender pedal or more, folioles uncial, last leaf a single linear foliole remote from umbel, flowers quite white.—Var. *major* has stem bipedal, the lower leaf with 5 folioles.

771. MESODISCUS PROLIFERUS Raf. stem terete solid, leaves remote, petiols carinate, folioles 3 or 5 lanceolate entire very acute, sometimes falcate: umbel thrice compound, first involucre with 5 linear folioles, second involucres none or one linear, commonly 5 umbellules, 7-15flore, involucels 2linear, petals flat obovate scarcely obcordate.—Also from Alabama, leaves sometimes with only 2 folioles, the lower have 5 subpinnate. Quite smooth and with white flowers like the last: the triple umbel is a great anomaly.

772. SATARIA R. ombelif. polygamous. Involucre none or 1 or 2 minute, involucre 3-6 subulate. Calix minute 5toothed petals equal round obcordate incurved, 5 short stamens, disk almost conical, 2 short styles divaricate. Seeds elliptic flat and thin, 5 striated, convexely incurved, surrounded by a thick fungose white margin over both seeds. *Leaves ternate, flowers ochroleuous*—united to *Peucedanon* by Nuttall (who did not see the perfect flowers) which differs by petals oblong, seeds oval winged around, flowers yellow &c. *Sataria* was an ancient name of *Peucedanon*. A few male flowers are mixt in umbels.

773. SATARIA LINEARIS R. *Peucedanon ternatum* Nut. &c. Stem virgate terete solid striate, leaves few remote on long petiols, folioles 3 sessile linear, very long and narrow, acute at both ends; umbels axillary and terminal, invol. linear or none, umbelules 5-7 and pauciflore—In Alabama and Georgia, perennial smooth, commonly 3 leaves and 3 umbels, folioles 2 or 3 inches long—Var. *longipes* 5 or 6 leaves, lower with petiols exceedingly long 10 to 18 inches, umbels 1-2 terminal. Flowers pale yellowish in both.

774. KERASKOMION R. *ombelif.* both invol. 2-3 phyle, calix hardly 5 toothed, petals obovate plicate, stam. filif. styles short divaricate. Fruit smooth globose as in *Aethusa*. *Leaves decomposed, umbels small, flowers white, axils bulbous*—united to *Cicuta* by the Authors, nearer to *Aethusa* by invol. and seeds, quite peculiar by the bulbous habit. The name was one of the Greek terms for *Aethusa* or *Oenanthe*.

775. KERASK. BULBIFERUM R. *Cicuta bulbif.* of most of our botanists—stem ramose terete fistulose, lower leaves triternate, others biter-nate or ternate, folioles linear serrate pectinate, upper simple entire, bulbs gemmular squamulose; umbels terminal naked—a very singular plant growing on banks of streams from Canada to Virginia, described on the living plants, and found very different from *Cicuta*. Flowers estival, minute and white, sometimes hardly any but bulbs profuse, they appear to reproduce the plant, are real buds with oval acute scales (as in buds of trees.) Stem bipedal, leaves sometimes subverticillate. It is doubtful whether the linnean plant is not different, Linneus says

stem angular and leaves capillary, Michaux says like Fennel. My plant is not such, but they may have seen bad specimens.

Genus DAUCUS and akin.

Here is a striking instance of the blending propensity of our Botanists, who do not take care to look sharp, overlooking the most evident characters. I can speak with confidence, *since I did the same* for 20 years concerning our wild Carrots, until at last having noticed some kinds with *bipinnatifid* involucre and others with *entire involucre*, I was led to notice observe and revise the genus and akin. It had even been supposed that our Carrots were naturalized, while they are found native in the wildest localities. My researches have already led me to ascertain 3 genera and a dozen species, all probably deemed *D. carotta* or *pusillus* when seen by others. The nature of the involucre and seeds is essentially generic here, else *Daucus* and *Caucalis* should be only one Genus. The G. *Dasyspermum* 295 of Necker which he says had a fruit hispid muricate all over, includes also several, since it was formed out of *Tordylium*, *Conium*, *Ammi* and *Scandix*! having muricate seeds.

776. DAUCUS Raf. involucre pinnate or multifid, partial with entire or trifid folioles. calix 5toothed, petals obovate emarg. inflexed, outer often larger radical unequal. Seeds with 4 aculeate wings. *Leaves decomposed, flowers white or red.*—This is the type to which belong the real Carrots: I must now add here for contrast all the Genera blended thereto. For the sp. see 783 to 792.

777. TRICTA Raf. involucre simple polyphyle, partial similar, flowers polygamous

radiate. Calix entire, styles divaricate, stigmas capitate, petals 5 unequal plicate involute. Seeds unequal oblong, with 1 or 3 ribs unequally echinate cristate. *Habit of Daucus.* The name was an ancient one for *Daucus*.

778. *TIRICTA DAUCOIDES* Raf. stem virgate terete smooth; leaves few, lower on long petioles, upper sessile, bipinnate, folioles linear confluent cuspidate, margin rough; 2 or 3 umbels on long peduncles, invol. 5-8phyle, linear entire, umbels multiflore longer.—In the Pine barrens of South New Jersey, root annual? white perpendicular not odorous as in *Daucus*, stem bipedal simple, leaves slender, flowers small white autumnal. Compare the *Leptocaulis echinatus* of Nuttall.

779. *BABIRON* Raf. involucre none, partial oligophyle simple. Flowers similar, none male nor radiate. Calix hardly 5toothed, petals ovate obtuse flat equal. Fruit ovate rounded smooth, seeds with several rows of small scaly tubercles. *Habit of Ammi and Leptocaulis.*—How distinct from the last, the name was also an ancient one of *Daucus* in Egypt, 3 sp. at least, some of which are among the *Leptocaulis* of Nuttall in Decandole, but not of same Genus.

780. *BABIRON PUSILLUM* Raf. annual quite smooth, stem simple filiform striate, leaves short 2-3pinnate, segments linear acute, the upper setaceous; umbels trifid terminal filiform, involucre none or 1 subulate, partial 3-4subulate, umbelules 3-5flore, pedicels unequal—sent me from Alabama, and by Dr. Torrey from Georgia as the *Daucus pusillus*! see 788. Stem 4 to 6 inches high redish, leaves small finely cut,

flowers minute few white. Nearer to *Leptocaulis* than to *Daucus*.

781. BABIRON DIVARICATUM Raf. *Daucus do* Walter, *Leptocaulis do* N. Dec. *Ammi do* Pers. and again *Ligusticum pusillum* Persoon! (Elliot) *Sison pusillum* Mx. Pursh, Elliot &c. —Annual slender smooth dichotome divaricate, leaves triternate multipartite segments linear or setaceous, umbel. 5-6fid, umbellules commonly triflore, pedicels equal, invol. 3 lanceolate minute—in Carolina and Florida, bipedal not humble, my specimens are in fruit, brown, really warty, hardly squamose. Here is a sp. put in 5 Genera!

782. BABIRON DICHOTOMUM R. *Ammi divaricat.* Coll. herb.—Smooth dichotome, leaves short bipinnate, segments narrow linear, umbels 2-4fid, umbellules 3-5flore, pedicels unequal, involucels 1 to 3 minute—annual like the others, with slender stems semipedal, branches divergent but not divaricate, more like *B. pusillum* than the last, but stem terete not striate nor simple, the tubercles of the seeds more scaly. Florida.

783. DAUCUS SCADIOPHYLUS Raf. stem growed retrose pilose, leaves few short tripinnate hirsute, segments linear acute; involucres 5-6 foliose bipinnate! partial simple as long as flowers, petals equal not radiate seeds hispid.—Florida, Alabama and Georgia, a Southern *Daucus* so unlike the others, as to be almost a N. G. I shall form a subgenus of it (with the next) GINGIDIUM with involucres bipinnate petals not radiate. This is pedal and bipedal, the involucres nearly similar to the leaves, flowers small, seeds oblong hispid between the muricate ribs. *D. Lucidus*, being the same as *D. gin-*

gidium, belongs to the same subgenus.

784. *DAUCUS SCARIOSUS* Raf. stem grooved foliose retrose pilose, leaves 2-3pinnate, segments lanceolate acuminate or cuspidate; involucre 6-8 *foliose bipinnate*, partial unequal lanceolate white scariosa, longer than flowers, some trifid.—Annual or biennial root not odorous, leaves long and narrow, nerved.—Var. *simplex* simple stem pedicel, a single umbel, hardly hispid—Var. *ramosus* branched hirsute, involucre hardly bipinnate, very long segments sometimes trifid. Found by myself in the glades of Pennsylv. autumnal, petals apparently not radiate, thus a *Gingidium* also.

785. *DAUCUS BREVICAULIS* R. Scabrous, stem nearly naked, lower leaves nearly as long tri-pinnate, segments confluent oblong bifid mucronate; involucre mostly trifid base scariosa on the margin, linear elongate, partial linear and trifid shorter than flowers, petals radiate.—A singular sp. found in hills of Pennsylvania and near Philadelphia, with ample leaves 6 to 8 inches long nearly as long as the stem, with broad segments, roots biennial hardly odorous branched.

786. *DAUCUS NUDICAULIS* Raf. smooth, subscapose, scape naked grooved, leaves radical bipinnate segments linear laciniate cuspidate; umbel lax, involucre 3-5fid setaceous, partial linear equal to flowers, margin scariosa, petals radiate—found with the last, perhaps a deviation, but it has another deviation var. *pumila* only 3 inches high, leaves larger than umbel quite linear—while the *nudicaulis* is 6 to 8 inches high, with short leaves 3 inches long, root white tapering slender.

787. *DAUCUS LEVIS* R. Quite smooth, stem

striate slender, leaves bipinnate small, segments linear acuminate; umbels small, involucre trifid shorter, partial simple, petals seldom radiate seeds echinate.—Not uncommon in fields and woods from New Jersey to Kentucky, pedal, leaves quite flat hardly nerved, stem not grooved terete.

788. *DAUCUS PUSILLUS* Mx. E. &c. annual, stem simple scabrous slender angular, leaves remote short bipinnate, segments linear acute, umbel single pauciflore, involucre trifid, partial simple, umbelules 1-3flore, seeds with wings deeply crested.—A sp. deemed doubtful by many or a var. of *D. carotta* like the others, but quite distinct; my specimen collected by Baldwin in Florida has only a few retrorse hairs, 3 small leaves, a small umbel; the seeds are large, with white wings deeply cut into pectinate stiff bristly crests. Perhaps a subg. *Lophioplis* near *Tiricta*.

789. *DAUCUS BREVIFOLIUS* Raf. nearly smooth stem terete foliose not grooved, virgate, leaves short remote pinnate, folioles pinnatifid segments oblong acuminate; involucre trifid, partial simple, seeds oblong pubescent hardly echinate.—Alleghany Mts. &c, pedal, root branched not odorous leaves 1 or 2 inches long only, umbels small, peduncles sometimes grooved and with a few hairs, seeds fuscate small, petals radiate—Var. *filiformis*, stem filiform striate, involucre setaceous.

790. *DAUCUS HETEROPHYLLUS* Raf. scabrous or subhispid, stem grooved branched foliose, leaves petiolate decomposed variable, the lower 3-4pinnate, folioles confluent lanceol. acuminate, upper bipinnate, folioles remote linear cuspidate; involucre tripartite elongate setaceous, base

marginate of white, partial subulate marginate, seeds echinate.—This is the most common sp. from Canada to Louisiana in fields and woods, nearest to *D. carotta*, but yet different. Root biennial odorous fulvous slender, stem 1 to 3 feet high, leaves 3 to 6 inches long, large umbel lax at first, contracted at last. Some varieties or deviations.

1. Var. *Fumaroides*. Lower leaves like *Fumaria* 4pinnate segments confluent, some involucre simple.

2. Var. *Asper*, stem very scabrous, leaves shorter 2-3pinnate.

3. Var. *Laxifolius*, nearly smooth, leaves with remote folioles.

It will be sufficient to compare carefully these American sp. with the European to perceive their distinctions. There are at least 6 sp. in Europe blended in *D. carotta*! or the garden kind native of the South, so easily known by large succulent root, stem hirsute deeply grooved, petioles carinate, broad decompound leaves, pinnate involucre &c—they are *D. maritimus*. *polygamus*, *exiguus*, see Pers. Wild. Lam. &c besides the 2 next, now before me.

791. *DAUCUS STRIGOSUS* R. strigose covered with white bristly hairs, stem grooved, leaves subsessile, pinnate and bipinnate, folioles oblong lacinate or pinnatifid acute, involucre pinnate broad with a thick margin, partial simple lanceolate.—A very distinct sp. sent me from England as a wild carrot, the hairs are thickly set stiff and flat, petals radiate.

792. *DAUCUS AGRESTIS* R. stem grooved scabrous, leaves remote subsessile base winged pinnate or bipinnate, folioles pinnatifid, segments oblong cuspidate; involucre pinnate or

trifid base with a white marginal wing, partial lanceol. scariosa. This is the wild Carrot of France and Germany different from the garden kind, root hard woody, stem 1 or 2 feet high, leaves 2 or 3 inches long, petals radiate. Also naturalized with us but scarce.

Thus the *G. Daucus* must be reformed in *G.* and *Sp.* the foreign kinds form several other *G.* or Subg. such as

793. *VISNAGA* Raf. invol. perianthiform multipartite, segments trifid, partial polyphyle, umbels phorantiform at base, petals inflexed bilobe, seeds oblong compressed striate smooth—united to *Ammi* as a subg. by modern botanists, but a peculiar *G.* seen alive. Types *V. vera* and *meoides*.

794. *BALLIMON* R. invol. o, 1 or 2 simple, partial 2-5 simple, seeds with a thick integument and 3 rows of uncinat spines—Types *B. muricatum* and *maritimum*, both *Daucus* do, auct.

795. *PELTACTILA* Raf. petals very unequal, seeds with spines bearing peltate Stars! flowers commonly yellow.—Types *P. grandiflora*, *parviflora*, *aurea*, *hispida* &c all *Daucus* of Desf. &c.

796. *STAFLINUS* R. seeds semiterete turgid ciliate crinite—*St. setifolius* and *crinitus*. *Daucus* do auct.

797. *ENTASIKON* Raf. Polygamous. Involucres 2-3 phyl. setaceous, partial similar. cal. with 5 *unequal* persistent teeth, petals 5 equal. obcordate inflexed, stamens 5 equal, styles 2 *thick ovate* persistent, stigma obtuse. Fruit oblong smooth angular, laterally divided by a lateral furrow. *Leaves decomposed, flowers white*.—A very striking *G.* differing from all others known to me by the *unequal calix* and

ovate styles. If it is a *Trepocarpus* of Nuttall, how did he neglect these singular characters! The name was a Grecian name of a Chero-phylum.

798. ENTASIKOM TENUIFOLIUM Raf. *Athamanta cherophyloides* Nuttall in Coll. herb. *Trepocarpus aethusa*? Nut. in Dec.—Quite smooth, stem angular, leaves pinnate and bipinnate, folioles linear setaceous acute thin; umbels trifid opposed to leaves, ombellules 3-7 flore, male fl. peduncled, fertile nearly sessile.—Found in Arkansas by Nuttall, foliage glaucous minutely cut, stem yellowish, umbels peduncled lateral, flowers white, seeds 4 or 5 times as long as broad.

799. ENTASIKON? TUBEROSUM R. *Phellandrium do* Nut. in Collins herb. Root tuberose, leaves bipinnate, folioles linear obtuse—another plant found in Arkansas, by Nuttall and widely separated from the last, although hardly different, except by broader obtuse folioles. The specimens are imperfect, but the roots are oblong rugose twin; in a note it is stated the stem rises 3 or 4 feet high, the upper leaves are nearly simple, and the germination is acotyle!

800. UPOPION. Raf. Polygamous or even monoical. Involucres none. Calix 5dentate petals ovate obtuse flat (dark purple) styles divaricate. Seeds smooth elliptic each with 3 or 4 unequal large wings, commissure costate. *Leaves simple ternate and pinnate, flowers dark purple.*—This G. has been shuffled into *Thapsia*, *Cnidium*, *Thaspium*, *Smyrnum* &c which like *Zizia* it must form a peculiar one, well distinguished from *Thaspium* having yellow flowers, by its red flowers, petals not acuminate, large unequal wings &c. The name

was an accient one of *Thapsia*, and I have ascertained 5 species, probably all deviations.

801. *UPOPION PINNATUM* R. stem subangular, leaves pinnate, 5 folioles ovatoelong sessile acute serrate, base truncate oblique, terminal base acuminate; fertile flowers subsessile, seeds with very unequal wings.—Discovered 1823 in West Kentucky glades and since in several other places, Alleghanies &c, pedal, or bipedal, perennial like all the sp. folioles 1 or 2 inches long, terminal often larger. Flowers estival as in all.

802. *UPOPION LOBATUM* R. stem striate, leaves all trifoliate, lateral folioles subsessile oblique ovate acute serrate more or less lobed outside, terminal foliole petiolate, cordate ovate often trilobed; umbels multiflore, fertile and sterile flowers on short peduncles seeds elongate with narrow wings.—In Pennsylvania the Alleghanies, Virginia &c, 1-2 feet high, leaves sometimes very large, and curiously or variously lobed or cut, flowers copious sometimes all fertile, but seeds unequal in size.—A var. *Rigida* or perhaps peculiar sp. has stem and umbels stiff angular canaliculate, folioles large all unequal oblique ovate oblong unequally serrate, lateral sessile, medial base truncate auriculate on one side.

803. *UPOPION TRIFOLIATUM* R. stem angular striate, leaves all trifoliate, radical on very long petiols, folioles ovatoelong serrate, lateral oblique, terminal on a long petiol, base rounded or truncate; none lobed; umbels pauciflore, flowers shortly peduncled.—The most common sp. from New Jersey to Kentucky, bipedal, petiols often pedal, folioles uncial, the middle one sometimes deltoid.

804. UPOPION HETEROPHYLUM R. *Thaspium atropurp.* auct. Stem striate, radical leaves simple cordate, stem leaves trifoliate, terminal foliole cordate or ovate, lateral ovate obliquial, all serrate; flowers peduncled, male on longer peduncles.—This is the original sp. known and called *Smyrniium atropurpureum* by Lamark, leaves uncial, stem bipedal. So much like *Zizia cordata* in habits as to have often been mistaken for a variety of it.

805. UPOPION CORDATUM Raf. stem simple angular, all the leaves simple cordate petiolate, acute unequally serrate; umbel single naked, flowers glomerate subsessile mostly fertile.—In the Alleghany Mts. evidently a very distinct sp. pedal, 3 radical leaves uncial, one lobate on the sides, two stem leaves remote larger.—These 5 sp. offer a beautiful illustration of the formation of species by gradual deviations of forms, from pinnate to single leaves. They have nothing left in common but smoothness and serrate leaves besides the flowers.

806. ZIZIA PARVIFOLIA R. stem virgate grooved *pubescent* like the petiols, radical leaves small cordate trilobe crenate, stem leaves sessile trifoliate, folioles unequal ovatooblong acute unequally serrate, medial larger; umbelules pauciflore with unequal slender peduncles.—Very distinct from *Z. cordata* by pubescence small leaves mostly half inch long only, stem pedal, flowers polygamous yellow, seeds oval with 3 prominent ribs. Found in the Alleghany Mts.

807. SIUMIS (Sium) HETEROPHYLA Raf. stem simple fistulose costate, lower leaves on very long petiols trifoliate, folioles ovate serrulate, medial petiolate, middle leaves pinnate, 5 to 7

folioles lanceolate, upper leaf sessile trifoliate, lanceolate serrulate, involucre lanceolate reflexed.—Found from New Jersey to Illinois, in waters, rare, pedal and bipedal, folioles about 3 inches long, all serrulate sessile except the odd one; umbel with about a dozen of umbellules, 6 to 8 small folioles for involucre, the partial still fewer and smaller less reflexed, flowers white as in the Genus, quite distinct from *S. latifolia* and akin species.

808. PHAIOSPERMA Raf. herb. 1833 page 77. Polygamous, Invol. one, partial few. Calix 5dentate, petals obcordate involute, styles elongate, stigmas capitate. Fruit smooth fungose ovate convex with a thick integument, no ribs nor angles nor wings nor thicker edge. *Leaves sometimes opposite, polytome, flowers white small, seeds brown.*—This G. which was pronounced new by Torrey and a Polytenia by Nuttall, differs from it, as will be seen below, and chiefly by the involucre and the seeds convex and not concave outside. The name alludes to the brown seeds. I have corrected the characters by withdrawing from it *Ph. verticillata*, but uniting a new species.

809. PHAIOSPERMA TRIFIDA Raf. herb. stem dichotome subcostate, leaves alterne and subopposite cuneate triparted, segments oblong subequal tridentate; involucre unique, partial 2-4linear—discovered in 1823 in the Western glades of Kentucky, pedal, vernal, leaves short, flowers small, seeds of a bay brown.

810. PHAIOSPERMA PULVERULENTA Raf. glaucous pulverulent, stem dichotome striate, leaves alternate triparted segments oblong pinnatifid; involucre often lacking, partial 5-8 linear colored—In Florida, found by Kin or Baldwin,

anonymous in Coll. herb. covered by a scurf, well branched, leaves short, flowers not so small nor so white, apparently ochroleucous in the specimen, umbels glomerate with many male flowers and very few fertile. The seeds not being ripe, I cannot be positive on the Genus, but the habit is quite near the last, the unripe seeds are ovate oblong smooth flat.

811. *PACHILOMA* Raf. (thick edge) *Polytenia* Dec. add to characters. Polygamous, invol. none, partial few. Fruit elliptic or obovate with a thick margin, middle concave striate. Type *P. NUTALI* Raf. *Pol. do* Dec. *Tordylium Americanum* Nut. in Col. herb. stem dichotome grooved roughened, leaves alt. and opposite triparted, segments pinnatifid cuneate, last trifid; involucels 3-5 linear, seeds elliptic. —Such are my specimens from Nuttall himself, and Arkansas.

812. *PACHILOMA VERTICILLATA* R. *Phaiosperma* or *Polytenia do* Raf. herb. p. 77. Stem fistulose grooved, branches whorled rigid, leaves alterne and whorled bipinnatifid, pinnules cuneate sublacinate; involucels 1-3 linear, fruits obovate—found in 1823 in Glades of West Kentucky, vernal, sesquipedal, a very distinct and singular sp. by the whorled habit, fruit similar to the last by the edges &c, but not regularly elliptic broader above and thus obovate, hardly striate in the central hollow.

I have yet several doubtful and rare ombelliferous plants from Florida, Alabama, Kentucky, Illinois and Arkansas, which require further examination. My *N. G. Orimaria* was described in Atlantic Journal, in my Herb. Raf. p. 78 are 3 new *Cherophyllum* and 2 new *Archemora*. My *G. Ptilimnium* of 1818 has since

been called *Discopleura* by Decandole, my *Pt. junceum* disc. 1823 in West Kentucky is perhaps a *Leptocaulis*. My *Thaspium tenuifolium* R. herb. p 78 is neither of that G. nor a *Zizia*, but probably an *Archemera* also. The *Ferula villosa* which has been united to 4 or 5 genera, must perhaps form a peculiar one which I have called *Scadiasis*. My G. *Cyrtospermum*, *Lomatium*, *Cymospermum*, *Osmorhiza*, *Marathrum* or *Adorion*, have been either adopted or illustrated by Decandole. I now pass to the **ERYNGIDES** that are a family distinct although akin to this.

813. **STREBLANTHUS** Raf. atl. j. 1833 p. 149. Flowers monoical in separate heads. Involucre 4-6phyle, folioles unequal entire, phorranthe cylindrical papillose, male fl. in ovate heads apetalous, calix 4fid, stamens 4 subsessile, female flowers in oblong heads, calix adherent 4 dentate persistent, pistil obovate punctate, petals none or deciduous, styles 2 filiform persistent, stigmas capitate. Fruit crowned bipartible in 2 seeds convex scrobiculate. *Annual herbs smooth prostrate, leaves opposite simple, heads axillary*.—This character is taken from the first sp. but the G. probably contains many sp. and may be modified to comprize them: all the *Eryngiums* not perennial nor stiff, nor with alternate stiff leaves, must be examined well, and may perhaps belong here although some sp. may be polygamous, others with 5 stamens occasionally. It forms now a striking G. of **ERYNGIDES** by the monoical apetalous tetrandrous flowers. The *Er. cernantesi* of Mexico *E. tenue* or *gracile*, *balduini*, *prostratum* of the Southern States may belong thereto. The name means deceitful flowers.

814. *STREBLANTHUS AURICULATUS* Raf. as above. Stems filiform flexuose, leaves subsessile, lower petiolate ovate lanceolate acuminate gashed or with 1 or 2 auricles, heads axillary solitary pedunculate—In the Western glades of Kentucky, flowers estival bluish, stems a foot long quite weak, leaves commonly with some notches, auricles unequal when double, involucre linear, papillas of phoranthé very short.

815. *STREBLANTHUS HETEROPHYLLUS* R. *Eryngium prostratum* Nut. stems filiform flexuose, leaves petiolate ovate elliptic and rounded, obtuse retuse or subacute entire, the upper sometimes auriculate, heads axillary solitary pedunculate—found in Arkansas by Nuttall, and a real *Streblanthus* very similar to the last, chief difference the great diversity of the leaves, quite entire. The *Eryngium gracile* of Elliot appears to answer to this species.

816. *STREBLANTHUS HUMILIS* R. *Eryngium gracile* Tor. not Bald. *E. balduini* Spr. Dec. smooth suberect dwarf, lower leaves petiolate ovate acute dentate, upper sessile lanceolate often triparted. heads axillary and terminal—from Tampa Bay in Florida, sent me by Torrey for the next, quite different, only 3 inches high, involucre linear as long as heads, flowers bluish quite similar to the two last.

817. Subgenus *KLONION* Raf. differs by the phoranthé convex with stiff subulate chaffs like bracts longer than flowers, and no involucre but those outer bracts, 4 or 5 concave petals.—Here there is an approximation to *Eryngium*, the plants are stiffer, the flowers spinescent, but there is no perianth or involucre, the leaves are still opposite, the roots annual, there are some male flowers, and many have only 4 sta-

mens and petals. The name was an old Greek one for *Eryngium*.

818. **STREBL. OR KLONION GRACILE R.** *Eryngium gracile* Baldw. in Coll. herb. stem slender costate, leaves all tripartite, segments lanceolate or cuneate entire, hardly acute, heads spinescent pauciflore.—A very distinct sp. from Florida, detected by Baldwin; but Elliot having mistaken it, another has been called by his name, see 816. I describe the original specimens labelled by Baldwin. Many stems semipedal simple probably prostrate, but stiffer than in others, axils of leaves often foliose, peduncles equal to leaves, heads flattened with few flowers, some stiff spinescent chaffs at the base instead of a perianthe, flowers white.

810. **STREBL. OR KLONION TENUIFOLIUM R.** *Eryngium polyccephalum* Baldw. in Coll. herb. stems erect dichotome filiform grooved, all the leaves tripartite, segments linear entire; heads axillary and terminal minute ovate.—In Florida likewise, another very peculiar sp. more slender than the last, but diffusely branched, with remote slender leaves, only 3 to 6 inches high, with many small heads of white flowers.

820. **ATIRSITA Raf.** calix campanulate 5fid subequal, corolla campanulate 5lobed subequal, stamens 2 short not exerted, anthers globose, ovary depressed, style very short, stigma emarg. capsule 2locular? oligosperme. *Scapose flowers capitate*.—By a most extraordinary blunder of Nuttall and Collins, this apparently *N. G.* was referred to *Eryngium*! by them, altho' it has the habit of *Plantago*: the ripe fruit is required to settle accurately the family, and all the characters must be verified on the living plant, as I would not destroy my two specimens

by examining many flowers; but I venture to deem it a N. G. near *Veronica* and *Amphianthus* of Torrey. The name was an ancient one of *Plantago* of which it has quite the habit.

821. *ATIRSITA PUMILA* Raf. *Eryngium gracile*! Nuttall, *Er! plantaginicum* Collins, leaves petiolate and subsessile, ovate smooth, uninerve, unequally dentate or gashed, scape shorter than leaves terete villose, head ovoid—collected in Arkansas by Nuttall, leaves and scapes hardly over one inch long, leaves variously cut, sometimes nearly entire, with few or several teeth, scape thick very short, head small, without any visible bracts, calix and corollas obtuse, corolla hardly longer white, annual. vernal. One of my specimen appears a variety *serrata*, leaves subsessile subserrate, scape not longer than the head.

822. *VERONICA PERFOLIATA* R. Leaves lanceolate smooth acute subserrate, base connate; racemes axillary pedunculate pubescent, flowers fastigiate or geminate, bracts lanceolate as long as pedicels, calix segments equal ovate acute.—Florida, mistaken for a *Justicia* by Collins, near to *V. anagallis*, but a larger plant, leaves 3 or 4 inches long, not entire but remotely serrate, racemes not much longer, flowers only above rather crowded, corolla blue hardly exceeding the calix.

823. *VERONICA CONNATA* Raf. atl. j. 150. erect smooth, stem fistulose, leaves connate lanceolate entire acute; racemes axil. divaricate elongate lax, bracts linear half of pedicels.—West Kentucky near waters, annual, vernal, akin to *V. scutellata*, but broader and shorter leaves uncial, capsules bilobed compressed. In this

and the last sp. the opposite leaves are really connate.

824. *VERONICA DIFFUSA* R. *precox* atl. j. 79. stem diffuse compressed pubescent, lower leaves opposite, upper alternate, on short petiols, ovate and rounded, serrate laciniate trinerve; peduncles axil. solitary longer than leaves, capsule compressed emarginate,—Annual very early vernal blossoms blue and delicate in March and April, native of . . . naturalized on the Schuylkill near Philadelphia. I had called it *V. precox* in 1832, but there is another sp. of that name. Stems often procumbent weak, one foot long, leaves small, flowers pretty large, peduncles long, capsules drooping, calix with ovate equal segments. Very different from *V. chamædrys* and *teucrium* to which it is however related.

825. *VERONICA SPARSIFLORA* Raf. atl. j. 79. stem erect simple smooth terete solid, leaves opposite sessile cuneate entire obtuse smooth, upper oblong; raceme terminal elongate lax pubescent, flowers scattered, bracts linear obtuse, pedicels filiform longer, calix segments oblong obtuse, two shorter, capsules bilobed subcompressed—a very distinct sp. from Arkansas and Missouri, seen alive in gardens, annual, stem 1 or 2 feet high, leaves 1 or 2 inches, lower almost petiolate, flowers vernal large handsome purplish blue. By the calix quite unequal it belongs to my subgenus *Becabunga*.

826. *VERONICA MOLLIS* Raf. erect softly villous, leaves opposite sessile ovateoblong serrate acute, lower and radical oblong and cuneate nearly entire; raceme terminal bracteate densiflore, bracts lanceolate equal to flowers, calix lanceolate unequal.—From Oregon seen alive

in gardens, entirely covered with a soft velvety pubescence, but not cinereous as in next, stem commonly pedal, radical leaves caespitose variable larger some nearly obovate and obtuse, flowers vernal large handsome pale blue, style clavate, capsule not seen.

827. *VERONICA CINEREA* Raf. erect cinereous villose, leaves alternate oblong cuneate acute, subcrenate in the middle, flowers terminal spicate very dense sessile, bracts lanceol. equal to calix, segments unequal ovate obtuse.—From Oregon also, pedal, leaves uncial, spike terete, corollas dark blue or purple (almost brown in my specimen) contrasting with the canescent calix, stamens very long. Akin to *V. incana* but distinct by leaves &c, and also to the two preceeding, all three yet very different, this not at all racemose.—I have many other doubtful Veronicas of North America, and this Genus yet requires revisal in sp. as I did in Genera in Flora Telluriana. As I have 50 or 60 sp. of various parts in my Herbarium, I may hereafter write their monograph.

828. *ODACMIS* Raf. calix 4parted deciduous, 4 small petals nearly similar and equal, stamens 4 hypogynous, filaments short, anthers bilobe. Ovary free globular umbilicate, styles 2 extremely short. Capsule membranaceous utricular globular bilocular, with 2 or few seeds, opening by the concave umbilic above. *Creeping annual herb, leaves and flowers fasciculate*.—A very singular N. G. of my nat. order *ISOSTIMIA*, and probably my family *GALENIDIA*, with *Galenia*, *Florkea* &c; also akin to *EMPETRIDES* which only differ by a berry as in *Empetrum* and *Phytolaca*. The habit is very pe-

cular, and the name is derived from the uncinat teeth of leaves.

829. *ODACMIS FASCICULARIS* R. smooth, stem creeping angular, leaves petiolate fasciculate, subreniform with large hooked teeth, base subtruncate without teeth, peduncles of flowers longer than petiols.—From Florida, collected by Kin or Ware, anonymous in Coll. herb. small plant prostrate, fascicles of leaves remote alternate, leaves with many nerves and only half inch wide. Flowers greenish, sepals 4 ovate acute, petals 4 elliptic obtuse yellowish not longer than calix.

830. *BUINALIS* Raf. dioical. Calix deeply 5fid persistent, base turbinate with 5 tubercles at the clefts, segments flat edged and crowned by a thick colored membrane. Corolla none, male fl. with 5 stamens perigynous inserted on the calix short filiform fertile, and 5 alternate sterile without anthers, sometimes lacking. In female fl. ovary ovate, style filiform elongate, stigma simple. Fruit Akenae ovate smooth monosperm. *Stem articulate, leaves opposite sessile entire stipulate, flowers fascicled*—a new G. of family *ACHYRANTHIDES* differing from *AMARANTHIDES* by a single style and stigma. It differs from my G. *Steiremis* in fl. tellur. by dioical single calix, free stamens, &c. It has the habit of *Herniaria* and *Anychia* to which it is also related but differs by dioical flowers and single style, besides the calix not angular nor acute &c. The name was an old latin one of *Herniaria*.

831. *BUINALIS FLORIDANA* Raf. *Herniaria Americana* Coll. herb. *Anychia floridana* Baldw. do—prostrate diffuse subdichotome fascate, leaves sessile cuneate or obovate, obtuse or sub-

acute, entire thickish; flowers sessile terminal in leafy ramulose fascicles.—In the sands of Florida, found by Baldwin, perennial, almost suffruticose, stems 3 to 6 inches long very ramose, stipules scariose ovate acuminate, leaves small 2 or 3 lines long quite brown in the dry specimens; flowers minute dark purple margined of white, the ends of segments truncate almost retuse forming a vault but not a hood, these flowers are at the ends of the small branches crowded with small leaves and stipules.

832. ANYCHIA. Mx. The plants of this G. and others akin forming a small natural group, have been blended with the G. Queria, Paronychia, Achyranthus &c, their synonymy and sp. are in utter confusion. Having shown to Torrey 4 sp. widely different in habit, leaves and flowers! he pronounced them all *varieties* of *Queria canadensis*! They require as yet a monograph, and must be divided into 2 or 3 Genera by the stamens, that must all be examined again, since Michaux and Nuttall differ about them. I regret that I did not examine all mine when met alive. Meantime I will divide them into 3 subgenera or Genera, and add some new species.

Subg. ANYCHIA calix 5 parted persistent urceolate or segments angular or nervose on the back; end hooded acute. Stamens 3 to 5 fertile, none sterile? 2 short styles, capsule utricular monosperm. *Annual dichotomous plants, leaves opposite sessile with scariose stipules, flowers in dichotomies, uncolored.*

833. ARGYROCOMA Raf. Paronychia Nuttall not Tourn. Juss. difference, calix oblong, segments cuspidate nervose on the back. Stamens 5 fertile, 5 sterile? style bifid 2 stigmas capi-

tate. *Perennial plants, stems simple, flowers terminal corymbose.*

834. *PLAGIDIA* Raf. difference from *Anychia*, calix conical pentagonal, segments unequal acuminate not hooded, stamens 5 fertile. Style bifid, 2 stigmas acute. *Annual plants? leaves obliquial broader, flowers in dichotomies.* The name derives from the double obliquity of opposite leaves. All these genera belong to *AMARANTHIDES*.

835. *ANYCHIA DIVARICATA* R. stem decumbent puberulent very branched and divaricate, leaves oblong acute smooth, stipules ovate acute, flowers crowded striate sessile segments of calix nervose.—A very distinct sp. blended as usual with *Queria* or *A. canadensis*, branches so divaricate as to be sometimes almost reflexed, leaves 3 lines long one broad, flowers small quite crowded at the end of branchlets. Found from the Alleghany Mts. to Kentucky on hills, estival, stems spreading 6 to 10 inches.

836. *ANYCHIA LATERALIS* R. atl. j. 16. stem erect divaricate pubescent, branches unilateral, leaves remote linear oblong acute, stipules lanceolate acuminate, flowers sessile striate often lax:—On the arid hills of Kentucky, possibly a var. of last, but smaller 1 to 2 inches high or long, leaves and stipules narrow, flowers similar ostival.

837. *ANYCHIA FASTIGIATA* R. atl. j. stem erect pubescent, branches fastigiate, leaves linear cuneate acute adpressed granular beneath, stipules lanceolate, flowers few on short peduncles, calix pentagonal hardly acute.—On the knob hills of Kentucky, habit so different from 835 as to indicate a sp. a very small plant 1 to 3 inches high, leaves narrow, flowers with

segments hardly acute, not nervose. A var. my *A. conferta* atl. j. has the same habit, but flowers crowded, leaves subserrulate. I have several other var. of this Genus, my *A. polygonoides* is the 2d (*A. canadensis* or Nuttall and most of our botanists,) it is quite erect with narrow longer leaves often uncial patent subciliate, flowers nervose acute. The *A. capillaris* N. is the real *A. dichotoma* of Mx. quite distinct by broad leaves elliptic, stem filiform smooth, flowers as in 837.

338. *ANYCHIA NUDIFLORA* R. smooth, erect, branches unilateral, leaves linear acute; flowers in terminal naked cymes with few leaves, pedunculated, caliculated by radiate oval stipules, calix nervose hardly acute—from Florida collected by Kin, a small plant forming a passage to *Argyrocoma*, but flowers as in *Anychia* and leaves small.

839. *ARGYROCOMA IMBRICATA* Raf. *Paronychia argyrocoma* N. *Anychia* do Mx. has crowded leaves and flowers narrow linear elongate adpressed imbricate, flowers with imbricate silvery bracts or stipules.—While the *A. dichotoma* which is *Achyranthes* do Linn. *Illecebrum* do Wild &c, has flowers corymbose with lax and less silvery bracts; both have the calix long with very thick dorsal nerves, end very acuminate. A third sp. is Par. *sessiliflora* N. but his *P. herniarioides* is probably of next Genus.

840. *PLAGIDIA RUFA* Raf. *Anychia herniarioides* Mx? dichotome scabrous, much branched fastigiate entirely rufous, leaves obliquial crowded elliptic mucronate ciliolate, stipules lanceolate acuminate, flowers solitary.—Described from a specimen from Florida anony-

mous in Collins herb. apparently the plant of Mx. but I cant be certain as he omitted the singular obliquity of the leaves almost as in Chamaesyke, and the striking rufous color almost like snuff of the whole plant even the stipules, about 3 inches high, leaves 3 lines long, quite obliquial at the base altho' sessile, flowers few and small.

841. AMORGINE Raf. calix 5parted persistent caliculate, segments obtuse, convex outside, canaliculate inside, 3 or 4 small scales at the base. Corolla none. Stamens 5 free short inserted on calix, anthers round, no sterile stamens. One style entire, stigma simple obtuse. Capsule utricular monosperm. *Dichotome articulate, leaves opposite with stipules, flowers terminal corymbose*.—Another new G. partaking of habit of Anychia, but flowers as in Argyrocoma yet colored and different with single style as in Buinalis, Cadelaria &c, of family ACHYRANTHIDES. The name was one of Dioscorides for Parietaria.

842. AMORGINE ALBESCENS Raf. smooth erect dichotome, leaves shorter than internodes linear cuneate acute, stipules lanceolate; flowers corymbose crowded sessile naked albescent—Florida, anonymous in Collins herb. probably a larger plant than akin, stem rigid, leaves elongate almost like Argyrocoma uninerve drying black like them; flowers forming a compact corymb, sessile without bracts nor leaves except the short calicule, of a dirty white color or tinged of incarnate. A very distinct sp. and even G. overlooked or mingled in our Achyranthes, which form many Genera, Steiremis, Caraxeron, Phylepidum &c for which see my flora

Telluriana, where they are described, and I add here another new *Steiremis*.

843. *STEIREMIS CILIATA* R. *Illecebrum polygonoides* Mx. Coll. herb. not of others? Stem prostrate pilose, leaves opposite unequal. petiolate obovate rounded obtuse, base ciliate; flowers in small axillary glomerules, bracts and segments of calix scariose nervose ovate acuminate—in Florida and Georgia on Sea Shores, also in Louisiana, stems pedal with long soft hairs, the pair of leaves constantly unequal in size about 1 inch long, glomerules of flowers not longer than petiols whitish or fulvous. This is not the *Achyranthes repens* of Elliot, which is the type of my *Steiremis*, that has lanceolate leaves; it is nearer my *St. sessilifolia* fl. tellur. 552, of Africa and Spain, but with sessile acute leaves. The leaves appear thickish and when dry have vermiculate spots almost transparent when held to the light.

844. *BLUTAPARON* Raf. calix double scariose persistent, external 3parted unequal, internal 5parted unequal, segments flat not nervose. Stamens 5 free, hypogynous. Ovary quite flat round, 2 styles, stigmas obtuse, capsule lenticular monosperm. *Leaves opposite not stipulate, flowers terminal capitate*.—A very peculiar G. of not family AMARANTHIDES with the habit of *Gomphrena*, but quite different from it, and from *Illecebrum* to which it had been united by Linneus and others. The name is abridged from *Bulutulaparon* old latin name.

845. *BLUTAPARON BREVIFLORUM* Raf. *Illecebrum vermiculatum* Mx. and N. Amer. smooth erect, leaves sessile linear cuneate acute thick, heads of flowers globose or depressed, segments of calix oblong or elliptic obtuse. On

the sea shore of Florida collected by Dr. Baldwin, the good specimen in Coll. herb. has enabled me to fix this Genus and sp. very different from that of S. America. Stem erect terete, leaves uncial commonly longer than internodes, heads of flowers quite small depressed pauciflore, flowers white scariose, two segments of the inner calix larger elliptic making the flowers appear compressed, fruit discoidal flat lenticular, perhaps bivalve when ripe. I must add the linnean sp. for contrast.

846. *BLUTAPARON REPENS* Raf. Illec. vermic. L. and of S. Amer. smooth creeping, leaves sessile linear carnose semiterete, heads of flowers oblong—Brazil, Guyana, Curazao, pedal, leaves like hyssop sometimes verticillate by 4.

Thus I was right when in the first volume article *Achyranthes*, I stated that the plants akin thereto were in utter confusion: our botanists seldom verifying the Genera of their sp. We have yet the *G. Oploteca*, with my *Xerandra*, see fl. tel. 562, some real *Celosias*, and *Gomphrena* naturalized, and my *Adoketon* see first part, to which add that the *Illecebrum alsinifolium* of Scopoli is another sp. different from my *Ad. saxatile*.

847. *CORISPERMUM PILOSUM* Raf. pilose, stem angular, leaves alternate linear elongate uniserve, flowers in axillary glomerules ovate, sepals scariose pilose ovate acuminate triserve. —Found by Kin in Florida, really of this *G.* hitherto not known as American, whole plant fulvous in the specimen and with scattered hairs, leaves 1 or 2 inches long narrow, glomerules subovate, crowded and capitate at the top flowers imbricate glumaceous squarrose, 2 sepals equal large, enclosing 1 single stamen fili-

form, anther round, seeds ovate lenticular.— Let it be remembered that these discoveries of Kin and Baldwin had been made 20 and 30 years ago, laying dormant like those of Bartram in herbals.

POLYGONUM and akin Genera.

This Genus the shame of botanists as belonging to 10 linnean classes! was illustrated in my flora tellur. 401 to 434. I have described there many N. Amer. sp. and the new Genera *Tracaulon*, *Spermaulaxen*, *Stopinaca*, *Antenoron*, *Tovara*, *Pleurostena*, *Chulusium*, *Peutalis* &c. I shall merely add some other remarkable new species formerly included in Polygonum and Rumex divided also in 7 Genera 576 to 582 fl. Tellur. Having in my herbal about 100 sp. of these G. akin and reformed, I may yet revise the whole.

848. PEUTALIS or MITESIA LIGULARIS Raf. smooth filiform, leaves lanceolate acute, sessile sheaths simple obsolete, racemes axil. and terminal filiform pauciflore, flowers remote, sheaths tubular ligulate obtuse equal to pedicels.—A curious little species, half pedal, deemed *Polyg. mite* by Collins, very different, leaves few uncial quite smooth, racemes with 3 to 7 flowers, each out of a singular sheath, calix incarnate 5lobed seeds lenticular. Apalachian Mts. of Carolina, Iron Mts. found by Lyons? *Mitesia* may be a subg. of *Peutalis*, this appears a *Peutalis* by seed, I cant count the stamens usually 6 in *Peutalis* and *Mitesia*, but with 3 styles and trigone seeds in *Mitesia*.

849. PEUTALIS or MITESIA FLORIDANA Raf. Polyg. N. sp. Baldw. smooth erect simple, leaves sessile narrow lanceolate nearly obtuse margin rough, sheaths tubular bristly, flowers in a sin-

gle terminal spike, slender pauciflore, adpressed subsessile in the bristly sheaths—Florida found by Dr. Baldwin and deemed new by him, stem pedal, leaves biuncial, spike uncial 7 flowers—I have also the *M. hirsuta* Raf. polyg. do of Walter, Elliot &c, collected by Baldwin in Florida, a singular sp. covered with long fulvous hairs, leaves broadly lanceolate, sheaths of flowers tubular obtuse nearly as in *M. ligularis*.

850. *PEUTALIS* OR *MITESIA DIVERGENS* R. smooth decumbent ramose, branches divergent or reflexed, leaves sessile narrow lanceolate acute margin smooth, sheaths scariose ciliate, racemes terminal filiform, sheaths valvular shorter than pedicels.—Discovered 1818 in Kentucky, deemed Polyg. divaricatum then, but having obtained that plant it is quite different. Stem 2 feet long, branches diverging like a T not like a Y, even often reflexed, leaves equal to internodes 2 inches long very narrow, spikes as long, flowers white estival, seeds trigone and thus a true *Mitesia*.

851. *PEUTALIS* OR *HEPTARINIA LONGIFOLIA* Raf. smooth erect ramose, leaves narrow lanceolate very long acuminate sessile, margin rough, sheaths scariose ciliate, racemes slender filiform spiked, sheaths tubular subciliate—Mts. Alleghanies and hills of Pensylv. bipedal, leaves 5 and 6 inches long, only half inch broad, flowers incarnate small autumnal, spikes uncial often geminate and interrupted at base. Flowers as in *Hept. orientalis* with 7 stamens, 2 styles exerted, stigmas capitate, seed lenticular.

852. *PEUTALIS (DISCOLENTA) SCABRA* Raf. stem dichotome erect subangular, rough above chiefly in the peduncles of spikes, leaves petiolate lanceolate acuminate, margins and nerves

rough, sheaths scariose mutic; racemes many peduncled ovate and oblong, flowers fasciculate crowded.—One of the sp. akin to *P. D. lapathifol.* bipedal, very branched, leaves 2 or 3 inches long, spikes uncial or less, with a rough pubescence, flowers estival incarnate, seeds round flat with a hollow in each side and a thick obtuse edge. In Kentucky, Illinois &c. The *Discolenta scabra* fl. tel. 430 is a very different plant, perhaps even a *Dioclis*, and being smooth, it was by a mistake I described it for this: it must be called *P.* or *D. punctata* being quite so and probably *P. punctatum* of Elliot.

853. *PEUTALIS HETEROPHYLLA* Raf. smooth erect, lower leaves petiolate, oboval, or elliptic ciliate sometimes retuse, broadly lanceolate, upper subsessile narrow, all glaucous beneath and with smooth margins, sheaths pilose ciliate; racemes short pauciflore compact, sheaths scariose smooth.—Singular sp. disc. 1824 in Alleghany Mts. of Virginia, perennial, lower leaves small uncial quite ciliate, medial large triuncial, ciliate only at base, upper not ciliate; flowers of a dirty incarnate geminate in small racemes, seeds lenticular ovate obtuse.

854. *PEUTALIS GLOMERATA* Raf. smooth decumbent ramose diffuse, leaves sessile shortly lanceolate obtuse, margin smooth, sheaths mutic, flowers in numerous terminal glomerules, like little heads, sessile or peduncled pauciflore, flowers subsessile—in Pennsylvania and Virginia, annual, branches and leaves crowded, stem spreading about one foot, leaves small uncial, heads of flowers axil. or terminal, often interrupted divided in glomerules, flowers autumnal greenish white, seeds lenticular ovate, edges obtuse.

855. *PEUTALIS POLYSTACHYA* Raf. smooth erect ramose, leaves sessile lanceolate acute margin rough, sheaths scariose tubular aristate; racemes paniculate branched, slender and lax, flowers commonly geminate, pedicels longer than sheaths—from Pennsylv. to Kentucky, stem bipedal with a profusion of spikes, leaves 1 or 2 inches long, racemes as long axillary and terminal, flowers autumnal white, seeds ovate oblong compressed lenticular edge thick.

856. *PEUTALIS PALUSTRIS* Raf. stem simple smooth, leaves sessile lanceolate acute erect, with adpressed hairs on both sides glaucous beneath, sheaths tubular ciliate; spikes terminal pedunculate 1 to 3, filiform, flowers sessile, sheaths as long as flowers—a very pretty sp. growing in ditches and swamps from Vermont to New Jersey, deemed *Polyg. punctatum* by some botanists, but not at all punctate, and very different from the 2 punctate sp. of the North and South. Pedal, leaves biuncial, flowers rose color or incarnate, spikes slender uncial, seeds lenticular, stamens 6. It must be recollected that *Chulusium* has 5 stamens, *Peutalis* 6, *Heptarinia* 7, *Dioclis* 8, and *Mitesia* a trigone seed. As it is often difficult to count the stamens and some deem them variable, all those with lenticular seeds and 2 stigmas might be united as subgenera to *Peutalis* that answers to *Persicaria* which is not the Peach Tree! *Persica*.

857. *POLYGONUM SQUAMOSUM* Raf. smooth erect terete ramose, branches short divergent, leaves and sheaths imbricate, leaves linear oblong obtuse short, sheaths scariose scaly lanceolate acuminate; flowers axillary sessile—in West Kentucky disc. 1818, habit quite peculiar

by the scaly sheaths, leaves minute 2 lines long, flowers almost hidden in the scales as long as them and the leaves, estival.

858. *POLYGONUM RUBRICAULE* R. smooth, stems erect cespitose red simple angular striate, leaves minute few remote sessile deciduous linear obtuse, sheaths scariose lacerate fimbriate, flowers axillary sessile—hills of Pennsylvania, autumnal, very distinct by stems and sheaths, leaves sometimes only at end of branches and then imbricate, stems only 2 to 6 inches high, sheaths red, ciliate of white, flowers greenish and white.

859. *POLYGONUM NUDIFLORUM* Raf. smooth, stem angular ramose diffuse flexuose, base aphyllous, leaves terminal sessile oblong lanceolate acute, sheaths scariose truncate mutic, flowers axillary to the lower sheaths and not to the leaves—in Alabama, stems semipedal, the lower leaves fall very soon and thus leave the flowers naked, leaves half inch long, flowers commonly geminate longer than sheaths, calix urceolate green obtuse equal to seeds.

860. *LAPATHON SYLVATICUM* Raf. *Rumex* do An. nat. 91. Root tuberose, stem angular striate simple, leaves petiolate ovatooblong flat entire acute at both ends: raceme elongate naked articulate, outer calix segments oblong obtuse small, inner segments ovate laciniate, one granular—Western Kentucky and Illinois in woods discovered 1818 described 1820 as a *Rumex*; but it belongs to the *G. LAPATHON* of Tourn. Ad. which I have rectified thus, *calix double unequal, inner larger laciniate, one or more valves granular, stamens 6, styles 3*. Pedal, estival, root fusiform, radical leaves not larger than stem leaves.

861. **RUMEX** OR **ACETOSA** **HETEROPHYLLA** Raf. root tuberose, radical leaves ovate and rounded, hastate or entire, acute or obtuse, stem leaves remote petiolate ovate acute repand, racemose pauciflore—Apalachian Mts. of Virginia, root oblong rugose, stem simple subangular, leaves all petiolate, the radical smaller, not hastate nor sessile on the stem, flowers but few and not in interrupted spike.

862. **RUMEX** OR **ACETOSA** **INTEGRIFOLIA** Raf. Root creeping, stem striate simple, leaves all petiolate ovate or lanceolate entire acute, radical small ovate, caulinar few lanceolate, raceme filiform almost simple pauciflore—in Kentucky, semipedal, root not tuberose but perennial with fibres, leaves thin radical very small, very few on stem, flowers few remote. Although akin to the last, the root is quite different horizontal slender as in next.

863. **RUMEX** OR **ACETOSA** **AGRESTIS** Raf. **Rumex acetosella** of many bot. root creeping, stems grooved cespitose, all the leaves petiolate oblong or lanceolate hastate; spikes paniculate filiform interrupted.—This is our common Sorrel, of Europe and America, 6 to 12 inches high; but there are other blended sp. in Europe, since I have at least 3 others and one of them hardly different from *R. hastatulus* of Baldwin which I have also, his own specimen from Red River Arkansas. I will describe them hereafter, I now merely give their striking differences and also of 2 *Rumex acetosa*!

1. *R. A. hastatula* R. upper leaves sessile linear entire elongate. Europe and Red River.

2. *R. A. bidentata* R. leaves bidentate or entire oblong and linear, from Greece and Italy.

3. *R. A. angustata* R. leaves linear lanceolate sagittate. Sicily and Creta.

4. *R. A. olitoria* R. Garden Sorrel, leaves oblong sagittate, upper sessile and narrow.

5. *R. A. amplexicaulis* R. Leaves ovate sagittate sessile amplexicaule. Eastern Europe all in my herbal.

864. *ERIOGONUM ANNUM* Coll. herb. annual, stem simple cinereous naked above, leaves alternate sessile oblong or cuneate acute white tomentose beneath; umbels trifid, perianthes pedunculate multfl. campanul. 5 dentate tomentose.—Salt R. of Arkansas probably found by Nuttal, pedal and bipedal, leaves uncial, umbel small branches pauciflore, with a flower in center. This beautiful N. Amer. G. is now greatly increased although only one known to Michaux: I shall now add 4 sp. to it.

865. *ERIOGONUM LATERIFLORUM* Raf. stem simple white tomentose aphyllous and flobose above, leaves alternate lanceolate acute sessile, flobose above, tomentose beneath: umbel trifid, branches dichotome, flowers unilateral, perianthe subsessile campanul. subentire 2-3flore.—Plains of Missouri and Arkansas found by Bradbury and Nuttal, anonymous in Coll. herb. stem bipedal without leaves above, the white wool partly flobose appearing like little warts or wrinkles, leaves 2 inches long, umbel multiflore, flowers small.

866. *ERIOGONUM DIOICUM* Raf. suffruticose, dioical, silky white, leaves petiolate verticillate cuneate lanceolate obtuse white beneath, umbel with 6 involucres oblong sessile, perianthes glomerate sessile with obtuse teeth—found by Bradbury on River Platte, leaves 2 inches long, flowers in a double umbel multifid. My speci-

men from Bradbury is apparently only male.

867. *ERIOGONUM LONGIFOLIUM* Nut. in Coll. herb. stem simple cinereous, radical leaves petiolate cuneate elongate smooth above, white tomentose beneath, stem leaves sessile linear, umbel dichotome, flowers lateral glomerate sessile, perianthe campanul. 5-6fid obtuse.—Ozage prairies (Nuttal) in Arkansas, bipedal, lower leaves 6 to 8 inches long, becoming gradually less and very small above, flowers rather dichotomous than umbellate in lateral clusters almost sessile, perianthe deeper cut than usual.

EVOLVULUS and akin

I have several N. American sp. that would be reduced to *Evolvulus* by habit and calix equal; but this Linnean Genus must form many see fl. tellur. 1046 to 1054; while my specimens are often deficient in the flowers so as not be reducible easily to those genera, based on the shapes of corolla, styles &c: probably however most belong to my *Stylisma* of 1817.

868. *STYLISMA* R. 1817. fl. tell. calix simple subequal, corolla campanulate subentire or sub-tendentate, filaments 5 subequal villose at base, anthers sagittate, disk annular, style biparted, 2 stigmas globose, capsule 4locular 4sperme.—*Perennials, peduncles axillary*—The true *Evolvulus* differs by corolla rotate 5fid, capsule 2locular 4valve disperme, 2styles.

869. *STYLISMA HETEROPHYLLA* Raf. Convolv. tenellus Muhl. in Coll. herb. C. trichosanthes Lec. in do, not of others—stem erect terete pubescent, leaves subsessile nearly smooth, lower obovate obtuse, upper elliptical obliquial acute, peduncles patent uniflore double of leaves with 2 unequal oblong bracts, calix smooth, segments ovate acute—Florida and Georgia, a very dis-

unct sp. stem pedal, leaves small semiuncial, peduncles uncial, corolla nearly entire, stamens subequal, styles deeper cut, stigmas really globose. Evidently not the *C. tenellus* of Elliot.

870. *STYLISMA ELLIPTICA* Raf. stem twining terete pilose, leaves petiolate elliptical hardly pubescent, base subcordate, end obtuse mucronate, peduncles uniflore subequal to leaves with two minute bracts, calix smooth, segments ovate acuminate, capsule hirsute—sent me from Alabama and Georgia, trailing or twining for 2 or 3 feet, leaves uncial, style bifid, 2 globose stigmas. My *Styl. sherardi*, *Convolv.* do Pursh. Elliot, a doubtful plant differs from this by leaves retuse and sessile flowers.

871. *STYLISMA PEDUNCULARIS* Raf. *Convolv.* *tenellus* Lin? Elliot &c stem flexuose pilose, leaves subpetiolate elliptical obtuse mucronate ciliolate, base subcordate, peduncles elongate 2 or 3 times the length of leaves 2 or 3flore, calix smooth, segments ovate acuminate bracts minute, capsule bearded—Alabama and Florida, near the last but larger leaves, stiff long peduncles, style deeply divided, stigmas obtuse. The *Conv. tenellus* of Elliot only differs from my specimens by peduncles 3-5flore, calix ciliate &c.—But his *C. trichosanthes* my *Stylisma* do, differs much being quite tomentose &c.

Having obtained both the *Evolvulus sericeus* of Cuba collected by Jalambic and that of Florida from Baldwin; they appear alike, except that the stem is nearly smooth in the Cuban specimen, pilose in the Floridan.

872. *DARLUCA* Raf. calix 5parted equal persistent, corolla tubular hirsute outside irregular subbilabiate, lips 2 and 3lobed. Stamens

5? unequal, anthers bilobe. Ovary villose, style villose bifid, stigmas simple. Capsule villose 2locular 2sperme. *Habit of Stylisma*—a very singular Genus nearly alike Stylisma and Evolvulus in habit, leaves, calix, style &c, but with irregular corolla, singular anomaly of the Convolvulides, but already partly found in my G. Doxema 1020 fl. tellur. perhaps however of another family. Dedicated to Darluc, author of the Natural history and botany of Provence, who I think has been overlooked by all dedicators of Genera, if otherwise I substitute the name of NELEIXA mg. not smooth outside.

873. DARLUCA PROSTRATA Raf. prostrate pubescent, leaves subsessile oblong obtuse or acute at both ends, peduncles uniflore incurved longer than leaves, with 2 alterne linear bracts, calix pilose, segments ovate lanceolate acute.—In Florida, found by Ware, anonymous in Coll. herb. with Evolvulus, but irregular corolla noticed. Stems terete elongate nearly simple, leaves semi uncial narrow oblong, peduncles subuncial, corolla very hirsute outside, capsule ovate inclosed in calix.

874. EVOLVULUS? CUNEIFOLIUS R. fl. tel. 1046. erect smooth, leaves linear cuneate acute, peduncles uniflore pilose longer than leaves, calix pilose linear capsule pilose longer than calix—Pine barrens of New Jersey, pedal, my specimen has no corolla and is in fruit which appear unilocular with one or two seeds, 2 styles persistent, stigmas obtuse. Probably a subgenus or G. PLESILIA Raf. but the corolla and stamens must be described, the calix as in Stylisma.

As to the Convolvulus and Ipomea of Authors, they are illustrated at length and revised in my fl. tellur. 1001 to 1054, being divided into

many striking Genera, with several Amer. sp. introduced, I will merely add here two from Collins herbarium chiefly.

875. *IPOMEA HUMILIS* Raf. *Ip. heterophylla* Col. herb. smooth, stem erect humble angular, leaves cordate palmate 5lobed, lobes ovate and lanceolate acute, peduncles as long as leaves 1-2flore, 2 subulate bracts, segments of calix ovate acute ciliate, hairs curved—South Florida and Cuba, annual, root slender, stem semipedal, leaves small similar, flowers red, calix with singular cilia on the margin and back, white long and incurved. Very different from *Ip. heterophylla* of Mexico, a large climbing plant, with different leaves: both belong to the subgenus *Hemilasis* fl. tel. 1016 with very unequal calix.

976. *QUAMOCTITA MULTIFIDA* Raf. Twining, smooth, leaves multifid laciniate, base truncate sinusses obtuse, segments linear and lanceolate acute, peduncles 3-5flore equal to petiols, calix acute—a curious sp. deemed a garden hybrid, produced by *Q. coccinea* and *Q. pinnata*, leaves variously cut, few alike, some reniform with shorter cuts, flowers handsome large purple, tube clavate, limb flat stellate pentagone, stamens exserted. Seen alive in gardens, where sometimes spontaneous.

877. *PANAX LANCEOLATUM* R. Root slender, stem humble, folioles 3 to 5 subequal lanceolate acute sharply serrate sessile, the lateral oblique, umbel shorter than leaves—Mts. Alleghanies, blended by some of our botanists with *P. trifolium* that has folioles ovate and obovate much smaller and umbel much longer than leaves. This rises 8 to 10 inches, folioles over one inch long narrow: root slender, annual? 3 leaves as usual.

878. *PANAX AMERICANUM* R. *quinquefolium* var. do R. med. fl. t. 71. perennial, root fusiform tuberoso, stem streight, folioles 3 to 5 unequal, petiolate, 3 large serrate cuneate acuminate, two small at base subovate, sometimes lacking, umbel equal to leaves.—This is the famous American Ginseng found from Canada to Missouri, quite different from the Chinese or Tartarian sp. with *5 equal broad ovate leaves!* It has also some varieties, 1 *obovatum* with broader leaves unequally serrate, but still acute at base, 2 *elatum*, very tall, 3 feet high, perhaps only old age. For a long account of this plant see my med. fl. 2. page 52.

ASCLEPIAS and akin

879. *GONOLOBUS BIFLORUS* Raf. Coll. herb. prostrate hirsute, leaves small cordate ciliate acute on short petiols sometimes obliquial; flowers geminate, peduncles equal to petiols—on Red River in Arkansas and Texas, remarkable by small leaves and flowers, one fourth in size of *G. hirsutus*. flowers dark purple, lobes oblong obtuse: whole plant except corolla covered with soft white hairs.

880. *ANSONIA TENUIFOLIA* R. stem suffruticose ramoso smooth, branches pubescent, leaves narrow linear uninerve quite smooth, margin revolute, end obtuse—Florida found by Kin. One of the 3 sp. blended in *A. angustifolia*, which has leaves linear lanceolate, stem herbaceous pilose. The *A. ciliata* of Walter I have also and is quite distinct by flat leaves broader almost lanceolate quite ciliate with several small lateral nerves. There are 3 similar deviations In *A. latifolia* with ovate acuminate leaves, 2d with elliptic acute leaves, *A. elliptica*, 3d with lanceolate leaves which is *A. salicifolia*. I have

all six. This G. is usually misprinted *Amsonia* by a mistake: see Smith.

881. *ECNITES SALICIFOLIA* R. suffruticose erect, all the leaves sessile lanceolate acute sometimes oblique, glaucous beneath—in Florida, stems red, leaves 1 or 2 inches long; it differs from *E. difformis* with unequal leaves mostly ovate acuminate, as *Ansonia salicifolia* from *A. latifolia*.

882. *CYNANCHUM MICROPHYLUM* Raf. climbing smooth, leaves opposite oblong acute base rounded, petiols very short, umbels axillary nearly sessile pauciflore—Florida, deemed an *Asclepias* in Coll. herb but very near *Cyn. parviflorum*, evidently of same Genus, stem filiform, leaves 2 to 4 lines long only, flowers minute shorter than leaves, calix 5dentate, corolla 5fid obtuse.

883. *LYONSIA CUSPIDATA* Raf. trailing smooth, lower leaves opposite, upper alternate, all linear flat remote, base acute sessile, end obtuse cuspidate, umbels axil. subtriflore sessile, fruits subulate smooth—Florida, deemed *Cynanchum angustifol.* by Collins, which is *Lyonsia maritima* of Elliot, but that sp. differs by crowded opposite leaves acute canaliculate and thick, umbels multiflore. This has stems filiform, leaves 1 or 2 inches long very narrow, follicles as long. *Lyonia* was a misspelling.

884. *ANANTHERIX GRANDIFLORA* Raf. smooth stem flexuose grooved angular, leaves scattered sessile upper opposite oblong elliptic obtuse mucronate reticulate; umbels terminal corymbose—a fine sp. collected by Kin in Arkansas, pedal and ultra, stem thick with obtuse angles and deep grooves, leaves two inches long crowded, several terminal umbels 7-10flore pedunculate,

flowers very large glaucous, segments of corolla patent ovate obtuse; deemed a *Calotropis* by Collins, but a real *Anantherix* and by no means a *Stylandra* N. or *Podostima* E. To the same Genus appears to belong *Asclepias connivens* of Baldw. Elliot &c which is very akin to this in leaves and flowers, but has stem terete and leaves opposite narrower, white ringed warts on the stem, I'll call it *Anantherix verrucosa*: my specimens are from Alabama. *A. viridis* N. differs by leaves narrower thick pubescent, umbels lateral subsessile &c.

985. OLIGORON Raf. *Acerates* Elliot. See my article *Acerotis* in first part. I have since divided them. My name is found in *Dioskorides* for an *Apocynum*. *Acerates* was bad derived from *Acer* and *Aceras*. This G. will be easily known by the sessile scattered leaves, the erect umbels and 5 small shining tips upon the staminal apparatus, auricles adpressed without appendages.

886. OLIGORON LONGIFOLIUM Raf. *Asclepias* do Mx. *Ascl. floridana* Lam. *Acerates longif.* E. —Pubescent, leaves linear lanceolate elongate trinerve, umbels peduncled multiflore, auricles shorter than stamens—Carolina to Florida and Arkanzas, leaves 2 to 6 inches long, flowers tricolor, centre yellow, corolla white, tip purple. The structure of the central apparatus is very peculiar, the little lucid tips almost concealed in the wings.—Var. *Hirsutum*, several umbels with great many flowers 50 to 60, pedicels long hirsute.

887. OLIGORON TENUIFOLIUM Raf. smooth, leaves narrow linear acute uninerve, margin revolute, rugose; umbels sessile multiflore, auricles as long as stamens.—A very distinct sp.

from Arkansas, anonymous in Coll. herb. stem pedal slender, with obtuse angles above as in the last, leaves adpressed 2 to 4 inches long very narrow, umbels 1 or 2 terminal and lateral, flowers bicolor, corol green, centre pale red, the tips very conspicuous black purple.

888. OTANEMA Raf. meaning *auricles without filaments*, Acerotis 1818, Asclepias Elliot and authors. Differs from last by central body with membranes for appendages above and no shining hard tips, leaves opposite umbels axillary sessile nodding. I have 3 sp. of it, all have simple terete stems and pubescent leaves, umbels multiflore globose, flowers greenish &c.

889. OTANEMA LATIFOLIA Raf. leaves elliptical or rounded, obtuse or retuse, mucronate petiolate, undulate reticulate roughly pubescent rigid—from the Alleghanies to Kentucky in glades, pedal and sesquipedal, leaves nearly 2 inches long, over one broad, sometimes almost round seldom obovate—Var. *Retusa*, all the leaves retuse.

890. OTANEMA OVATA Raf. leaves ovate or subovate, petiolate, acute flat, base often subcordate, roughly pubescent—from New England to Virginia, smaller plant & leaves chiefly uncial, flowers fewer, perhaps another var. of the last, petiols very short as in last.

891. OTANEMA LANCEOLATA Raf. Ascl. do Ives &c. Ascl. nutans and viridiflora Raf. Mg. Pursh &c leaves lanceolate sessile flat, acute at both ends—from New England to Kentucky &c. Leaves 2 or 3 inches long, narrow. These 3 plants as in Ansonia and Upopion show the gradual deviation of species in shapes of leaves.

892. ASCLEPIAS MEGALOTIS Raf. hardly pubescent, leaves opposite subsessile, elliptic base

cordate, end obtuse or retuse mucronate, margin ciliolate, nerves reticulate, beneath almost glabrous; umbels lateral subsessile, multiflore, pedicels very short, auricles very large obovate truncate longer than stamens and appendages—Florida, sent me by Torrey as the *A. obovata* of Elliot, which is tomentose with obovate leaves and probably an *Otanema* perhaps even a var. of *O. latifolia*. This sp. is a real *Asclepias*, with curved subulate appendages in the auricles, leaves 2 or 3 inches long, one broad, flowers large white.

893. *ASCLEPIAS ALBIFLORA* Raf. *Ascl. nivea*? and *A. incarnata* of some Amer. Bot. stem pubescent, leaves ample thin nearly smooth subsessile, elliptical lanceolate, base obliquial, end acuminate, nerves pubescent; umbels terminal corymbose, auricles equal to stamens and appendages—fine sp. from the Unaka or Iron Mts. of N. Carolina, seen alive in gardens, where deemed a white var. of *A. incarnata*, yet much nearer *A. nivea* a sp. known to few: with broader shorter leaves, lateral flowers with green petals and white centre says Linneus. This has flowers perfectly white small but handsome, stem bipedal, leaves very large 6 inches long, two broad.

I could add or rectify many other sp. of *Asclepias*, and give again my *A. maritima* quite different from the smooth *A. incarnata*; and my *A. vanilla* the deviation of *A. quadrifolia* with opposite leaves, but I must leave this for a monograph; I have nearly all the numerous N. Amer. sp. *A. cinerea, pulchra, amena, paupercula, amplexicaulis, obtusifolia, curassavica, laurifolia, peroplicifolia, variegata, phytolacoides* &c. I deem this G. must be divided

into 3 subgenera by habit, which may become G. when the strange floral structure will be ascertained in all.

1. ASCLEPIAS, leaves opposite, milky plants.

2. SEPTIXIS leaves verticillate, not milky.

3. STETHORHIZA, not milky, leaves scattered, type *A. tuberosa* with all its varieties, *decumbens*, *splendens*, *imbricata*, *obtusifolia*, *angustifolia*, *undulata*, *oppositifolia*! &c. Here the sexual apparatus is borne on a pentagonal pillar as in *Stylandra* or *Podostima*, but this structure belongs also to *Ascl. curassavica* and others.

894. ONISTIS Raf. calix campanulate 5dentate equal, corolla campanul. subentire border pentagone. Stamens 5, filaments unequal thick short smooth inserted at base of corolla, anthers equal linear 2locular opening lengthways. Ovary round compressed, style long thick subclavate, stigma capitate. Fruit a capsule? discoidal compressed bilocular disperme. *Perennial, diffuse leaves alt. and oppos. flowers axillary solitary*.—A singular N. G. found anonymous among the APOCYNES of Florida in Coll. Herb. but quite different except by habit, and a N. G. of CONVULVIDES, different from all those established in my fl. tellur. 1001 to 1050 by the calix and pistil, corolla akin but not plaited, stamens quite as in that family. I have not the ripe fruit. The name was a grecian one for some Apocynum.

895. ONISTIS LONGIFOLIA Raf. creeping and quite smooth, stem branched diffuse, leaves sessile alterne and oppos. linear graminiform very long obtuse rugose; flowers on axillary peduncles nodding—root white creeping terete now and then swelled up, stems diffuse or prostrate

only a few inches high, leaves very long ribbon like, 3 or 4 inches in length, 2 lines broad ; fl. few of a dull yellowish purple, peduncles as long or longer, calix with 5 large equal teeth, nearly urceolate, corolla almost as in *Physalis*, subrotate when full expanded. Thus habit of *Cynanchum* rather than *Convolvulus*.

896. *HYDROLEA OVATIFOLIA* Raf. pubescent inerme, leaves ovate acuminate, flowers terminal fasciculate subsessile—very distinct sp. found in Arkansas by Nuttall, anonymous in Coll. herb. stem simple pedal terete, leaves scattered uncial, flowers glomerate calix lanceolate hirsute, corolla blue puberulent, styles long, stigmas capitate depressed.

897. *HYDROLEA PANICULATA* Raf. pubescent spinose, leaves linear lanceolate acute, flowers terminal paniculate, subcorymbose pedunculate—found by Kin in Arkansas, pedal, a short stiff spine at the axil of each leaf, panicle bearing 3 to 7 flowers at the end of the spinose branches, capsules bivalve globose, nearer to *H. spinosa* of S. Amer. than to *H. caroliniana*.

898. *LINUM REFRACTUM* R. stem erect hardly angular pauciflore, leaves linear acuminate reflexed quite smooth upper oblong, branches few erect uniflore, calix ovate acute uninerve—Origion or Canada, pedal, leaves nearly uncial elongate narrow, shorter almost oblong on the branches, flowers apparently incarnate in the dry specimen, collected by Walton. There are other var. or sp. of Flax in N. Amer. *L. virginicum* has var. *oppositifolium*, *foliosum*, *pauciflorum* &c.

899. *NEZERA* Raf. differs from *Linum*, calix with 5 segments unequal in size or shape, stamens equal to calix, anthers oblong, styles 5

very long, stigmas thick oblong capsule 5 locular.—Another *G.* of the family LINIDIA besides those of my fl. tellur. Habit similar, but the inequality of calix is very striking and generic. The name means *not true flax*, and several sp. of it are perhaps blended in *Linum*.

900. *NEZERA CARNEA* Raf. stem terete virgate branched, leaves linear acute patent crowded, margin smooth, upper subulate distant, flowers racemose few, peduncles equal to flowers, calix segments ovate acute, 2 larger round retuse, petals flabellate—in Florida, bipedal, leaves semi uncial acute at both ends, sometimes imbricate on sterile branches; racemes terminal simple sub-5flore, flowers large of a real flesh color or nankin, not incarnate. The segments of calix are very singular, two are different larger rounded enerve retuse marginate of white, the petals are truly flabellate shaped like a fan.

901. *NEZERA ALBIFLORA* Raf. *Linum striatum* Walter in Coll. herb. stem virgate simple, subangular, leaves linear acuminate adpressed, margin rough, upper subulate, flowers subcorymbose few, peduncles equal to calix, segments ovate acuminate uninerve, petals obovate—Hills of Georgia and Carolina, pedal slender, leaves smaller and not so crowded as in the last, flowers with 3 corymbose branches bearing 2 or 3 flowers, the lateral on short peduncles, calix with unequal segments but of uniform shape, petals white smaller than in last and narrower obtuse not flabellate. Stem not striate as it ought to be in *L. striatum* of Walter omitted by all our botanists.—I find in a collection of plants made in Texas by Drummond, (and sent me by Torrey without names, altho'

he says that Hooker has named them in his compendium) two new Flax apparently of this Genus which I have designed as follows.

1. *Nezera* (or *Linum*) *cuspidata* R. stem erect humble striate, leaves linear lanceolate cuspidate; flowers corymbose few, segments of calix acute nervose, 2 larger ovate, 3 smaller ovate lanceolate, petals obovate retuse—Texas, semipedal, leaves 6-9 lines long, flowers large apparently ochroleucous or yellowish white. Annual.

2. *Nezera* (or *Linum*) *imbricata* R. stem erect rigid humble angular, leaves subulate imbricate adpressed acuminate scabrous nervose, flowers dichotome erect, segments of calix subunequal, ovate acuminate nervose margin scariose—Texas, annual 3 to 6 inches high, leaves minute, flowers small incarnate? capsule 5locular, 5valve as in *Nezera*.

902. THEROFON Raf. 1828. *Boykinia* Nut. 1834 not of Raf. 1828. calix 5fid equal, semi-adherent, petals 5 elongate, stamens 5 inclosed inserted on calix, ovary 2-3fid base adherent, 2-3styles short, stigmas obtuse. Capsule 2-3locular polysperm, dehiscence inwardly above, partitions formed by double introflexions. *perennial, caulescent, leaves alternate, flowers paniculate*—a beautiful and rare G. of nat. order DICERACEA not Saxifragides, discovered by Kin, named by me in 1828, the name being one of old for *Aconitum*, and I had a *G. Boykinia* out of *Ammania* long ago. For another *Boykinia* see 996.

903. THEROFON NAPELLOIDES Raf. *Boykinia aconitifolia* N. rar. 81. *Heuchera palmata* Collins herb.—stem grooved viscid pubescent, leaves petiolate palmate 5-7fid laciniate multi-

nerve reticulate, petiols and nerves hirsute, panicle formed by corymbs of short secund racemes—handsome plant 1 or 2 feet high, not smooth as said Nuttall, but quite viscid by pedicelate glands appearing rough when dry, leaves like *Napellus*, base truncate becoming acute in upper leaves less divided subsessile: flowers white on pedicels shorter than calix unilateral. It grows in the Unaka Mts. or Iron Mts. of North Carolina, a region full of new plants as yet. The habit when out of bloom is so like *Aconitum napellus* that it may be the doubtful plant of that name said to grow there likewise. Probably early vernal.

904. *TRIODANIS* Raf. Campanulacea new G. or subgenus diff. from *Legousia* by calix with 3 unequal teeth, capsule with 3 unequal cells.—This is apparently a very material distinction; but in one or perhaps more sp. the corolla is besides lacking! or very minute with 5 short sessile anthers, and some deem it a variation! it is indeed a strange one amounting to a *Generic character*! and thus being perhaps a peloric Genus, a spontaneous late Generic formation! the name means 3 *unequal teeth*.

905. *TRIODANIS SCABRA* Raf. erect rough humble, leaves sessile oblong acute subentire, upper linear; capsules axillary solitary terete curved crowned by 3 subulate teeth—annual, 2 to 4 inches high, seldom with one or two branches, lower leaves broader subcrenate. Found by me 1823 in the glades near the mouth of the Tennessee R. and by Nuttall at Cedar prairies in Arkansas; but out of 7 specimens not one is in bloom, all are in seeds, probably very early vernal.

906. *TRIODANIS RUPESTRIS* R. procumbent

diffuse smooth, leaves sessile reniform subentire, capsules axillary solitary oblong, crowned by ovateoblong teeth.—Annual also, discovered in 1818 on rocks near Baltimore out of bloom as early as May, and also in the Alleghany Mts. This was deemed by Torrey a *peculiar* state of *Legousia amplexicaulis*, although that plant is erect rough, with different leaves and flowers. I consider them as great anomalies and curious pelorian Genus, as my Lobomon, Myctanthes &c.

907. *FEDIA HEMIODES* Raf. dichotome, leaves obtuse, sessile ciliolate dentate at the base, lower spatulate, upper elliptic, flowers glomerate sessile—in Arkansas, anonymous in Coll. herb. semipedal, leaves 1 or 2 inches long, with 2 or 3 large teeth on both sides at the base, but sometimes lacking, flowers terminal in small glomerules.

908. *FEDIA LIGULATA* Raf. dichotome above, leaves obtuse smooth entire, lower obovate or cuneate, upper ligulate, flowers glomerate, corollas with slender tube—another pretty sp. from Arkansas and Louisiana, hardly pedal, leaves short uncial not ciliolate; flowers white pretty, appearing pedicellated by the long tubes of corollas.

909. *FEDIA CILIOLATA* R. only once forked, leaves ciliolate, lower petiolate round or obovate, medial cuneate obtuse, upper oblong or lanceolate acute, base sometimes denticulate, flowers in bifid or twinglomerules, corolla short—in Kentucky and Illinois, 4 to 10 inches high, leaves small, longest uncial. It has several varieties or incipient Sp. 1 *Ternifolia*, semipedal leaves ternate, stem twice trifid, subtriflore—2. *Acuta*, all the leaves acute entire, upper linear

flowers few—3 *Dentata*. last leaves broad and denticulate at base.

CORYMBIFERES.

Of this extensive tribe of plants, I have yet a crowd of new and interesting N. G. and sp. some of which have been given in the first part, I must here confine myself to some of the most striking, waiting to see what Decandole and Torrey will do; good monographs of the G. Aster, Solidago, Erigeron, Helianthus, Coreopsis, Eupatorium, Liatris, Vernonia &c, or akin and blended are much wanted, and may be undertaken if not well settled by Decandole.

910. NEACTELIS Raf. Flosculose, perianthe in triple series adpressed not ciliate, inner colored, phorantho convex with subulate chaffs, floscules with tube and limb terete tubular, 5dentate, stamens and styles inclosed. Seeds without crown, linear compressed. *Leaves opposite, stem uniflore nearly naked*—A singular Genus with habit of my G. *Discomela* (1825) and the Helianthea with naked stems, yet not radiate; perhaps blended with them as did Collins, and as Elliot blended my G. *Anactis* with Aster, being his *A. discoideus*. Radiate and flosculose plants are always of different Genera even *Senecio* and *Jacobea*. My name means *Sun without rays*. By the seeds near to *Espeletia*, *Heliopsis*, *Helepta*, *Acmella* &c.

911. NEACTELIS STRIGOSA Raf. Helianthus apetalus Coll. herb. stem virgate grooved nearly smooth and naked uniflore, lower leaves opposite oblong acute entire, thick strigose on both sides by white tubercles ending in a bristle, a few short alterne leaves higher up; perianthe with segments ovate lanceolate acute—in Florida collected by Kinn? stem 15 inches, 3

pairs of leaves at base, one or two inches long, lowest larger subpetiolate, 2 or 3 alterne sessile lanceol. adpressed remote further up; but none within 8 inches of the flower, the strigose tubercles very peculiar white unequal ending in a deciduous stiff white bristle. Flower black purple as the disk of *Discomela*, one inch wide, segments of perianthe in 3 rows of 6 to 8 in each. the inner colored like the flower nearly acuminate, tube of floscules not longer than the tubular limb.

912. **AIMORRA** Raf. radiate, perianthe simple 8-10partite, rays 8-10 subentire, phoranth flat, chaffs obovate carinate, florets or floscules tubular without tube 5 dentate, stamens inclosed, stigmas exerted, seeds obovate 4gonal with 4 minute teeth. *Erect, leaves alternate*,—Very near to my *G. Helepta* see first part article *Acmella*, main difference habit alternate, and toothed seeds: the name was applied by Dioskorides to a *Chrysanthemum* or *Bupthalmum*.

913. **AIMORRA ACUMINATA** R. *Acmella alternifolia* Baldw. in Coll. herb.—smooth erect, stem angular, leaves alt. petiolate ovate acuminate serrate in the middle, trinervate reticulate, branches short uniflore, segments of perianthe oblong obtuse—in Florida, stem pedal, leaves over one inch, flowers few yellow on short foliose peduncles or branches, rays apparently obtuse entire.

914. **ZINNIA FLORIDANA** Raf. stem solid fusate triflore, leaves lanceolate, base dilatate subamplexicaule, peduncle central very long clavate, segments of perianthe rounded, rays obovate—an indigenous sp. of this pretty Mexican Genus, found in Florida by Kin, in Georgia by

Leconte, anonymous in Coll. herb, stem pedal quite smooth, leaves levigate over one inch long, peduncle 5 or 6 inches long, calix adpressed turbinate, rays pale red very broad about 8, the flowers at the end of the two branches sessile and perhaps abortive.

915. **BINDERA** Raf. N. G. near Aster, Binder in Coll. herb. diff. Aster, perianthe in a double series, each of 10 to 12 adpressed equal scariose segments, rays about 15 entire acute, pappus simple capillary fulvous as long as florets, seeds ovate pubescent. *Leaves scattered sessile, flowers white, involucrate*—apparently distinct from all the G. lately removed from Aster by perianthe, dedicated to the discoverer; if not approved as he is not much known as a botanist, I will substitute *Xalkitis* a grecian name of *Leucanthemum*.

916. **BINDERA** (or *Xalkitis*) **CILIATA** Raf. hirsute, leaves sessile cuneate acute, scabrose by adpressed hairs, margin stiffly ciliate; flowers terminal few subsessile, involucrate by 2 or 3 leaves, segments of perianthe linear acute pubescent whitish, rays white, narrow linear acute—discovered by Binder in Louisiana or Florida, branched, leaves uncial crowded, the lower less ciliate, the upper strongly ciliate, flowers uncial, perianthe with equal segments in each row, the inner row longer, pappus smooth silky fulvous.

917. **JALAMBICA** Raf. Flosculose, perianthe 4fid base campanulate 4gone, limb spreading, phoranthé flat naked with 4 flowers, 2 larger fertile florets opposite, infundibuliform 4fid segments reflexed, 4 stamens exerted elongated, anthers oblong, style bifid elongate, seeds oblong 4gone crown entire or 4gone 4lobed? 2 abortive florets or rays? *Annual creeping,*

leaves opposite, flowers solitary—a singular little genus, of which I have 2 specimens and a figure of the minute flowers, made by Jalambic, and yet am doubtful of some of the characters, which must be verified upon the living plants. Dedicated to the discoverer, a botanist who gave many plants of Cuba and Florida to Collins: if already employed *NEURELMIS* meaning *worm like neracs* may be substituted.

918. *JALAMBICA* (or *Neurelmis*) *PUMILA* Raf. smooth, stems creeping prostrate filiform dichotome, leaves on long petiols opposite rounded deltoid obtuse entire with vermiculate nerves; flowers few terminal peduncled.—A minute plant only one or two inches long, found in Cuba or Florida by Jalambic, deemed by him a *N. G.* of *Syngen. frustanea* or *necessaria*, leaves only 2 lines long and broad, sometimes decurrent on the petiol, covered by very singular nerves interrupted and quite vermicular. Flowers very small yellowish, the 4 segments of perianthe ovate acute, almost all destroyed for examination by Collins; but this plant will be easily known when met again by the perianthe and leaves when the floral characters may be rectified.

919. *LOMAXETA VERRUCOSA* Raf. *Hymenopappus corymbosus* Baldw. in Col. herb. *Polypteris integrifolia* Nut. El.—I introduce this rare plant to give the synonym of the real discoverer Dr. Baldwin, and rectify the thrice erroneous name of Nuttal, formed of *Pteris*! 2 already employed by Lacepede for a fish, and 3 not well applying, mine means the *marginate bristles* of the pappus. In Florida and Georgia between the Rivers Alatomaha and Satilla B.—in a note he says the leaves resemble the back of

an alligator, and in fact they are covered above with hard and rough warts whence my name.

90. *BALDUINA BICOLOR* Raf. nearly smooth, stem grooved naked above uniflore, leaves scattered sessile narrow cuneate obtuse entire, scales of perianthe adpressed broadly ovate acute, 12 white rays cuneate unequally trifid—another sp. of the real *G. Balduina*, habit exactly similar, but flowers larger with white rays and yellow disk. *B. uniflora* which I have must now be called *B. lutea*. This was found by Leconte in Florida or Georgia and deemed a N. G. in Coll. herb. stem pedal, leaves uncial becoming less upwards, rays larger than in *B. lutea*, which has a leafy stem, the peduncle incrassate leaves broader adpressed and not crowded.

921. *STEVIA OVATA* Raf. herbaceous pubescent, leaves opposite ovate acute serrate trinerve, corymb fastigiate, perianthe 4flore with 4 segments linear oblong acute, pappus of 4 short obtuse scales.—Texas and Arkansas, collected by Walton, stem pedal, leaves small hardly uncial opposite subsessile, flowers yellow, florets tubular 4fid obtuse, stamens inclosed, seeds linear smooth compressed, crown or pappus or 4 very short obtuse scariose scales. Probably a subgenus *Elettra* by the disposition in 4 &c. All the N. Amer. sp. akin to *Stevia* appear to deviate as the 2 next Genera evince, even the Mexican sp. include 2 other G. the *Mustelia* of Sprengel with double pappus, and my *Tomista* for *St. pedata* with perianthe camp. pappus truncate.

922. *OTHAKE* Raf. diff. *Stevia*, perianthe turbinate sub8flore, segments about 8 nervose, florets with slender tube, limb as long 5parted, anthers subsessile exerted, style elongate hispid.

stigmas revolute, seeds elongate as long as perianth obverse pyramidal 4gonous, crowned by 8 teeth or short scariose scales, *annuals, leaves alternate, end callose, flowers paniculate incarnate*. This G. is perfectly distinct by the perianthe, deep cut florets, scaly crown, leaves &c. The name means *warty apex*, the leaves ending in obtuse callosity.

923. OTHAKE TENUIFOLIUM Raf. *Stevia callosa* Nut. stem terete furfurulent, glandular above, leaves narrow linear thickish with adpressed hairs, panicle dichotome multiflore lax divaricate—in Arkansas, pedal, leaves uncial often with fascicles at the axils, flowers on long naked peduncles, the segments of florets narrow long linear acute, segments of perianthe cuneate acuminate.

924. OTHAKE LONGIFOLIUM Raf. stem angular and glandular above, leaves broad linear elongate biuncial thin nearly smooth, panicle pauciflore corymbose, peduncles erect—also from Arkansas, blended by Nuttall with the last, much smaller with larger leaves, semipedal, lower leaves sometimes opposite.

925. XETOLIGUS Raf. diff. *Stevia*, perianthe terete 5parted 5flore, segments equal lanceolate enerve, florets exerted with tubular limb 5dentate, anthers inclosed, stigmas hardly exerted revolute; seeds linear crowned by a pappus of 2 or 3 long rough bristles coalescent at base into a membrane. *Leaves opposite, flowers corymbose incarnate*.—Another very distinct G. having the bristles of *Mustelia* without the scales, *Stevia salicifolia* with 2 bristles belongs thereto, and will be my *Xetoligus salicifolius*. My name means *few bristles*.

926. XETOLIGUS BREVIFOLIUS Raf. smooth,

stem terete corymbose, leaves sessile oblong linear acute, the upper alternate, corymbs fastigiate foliose multiflore, peduncles and perianthes pubescent, segments lanceolate acute pappus of 3 bristles—from Texas or Louisiana found by Binder, a tall plant probably perennial, leaves short uncial, flowers pale incarnate and handsome profuse.

LIATRIS and VERNONIA.

These two Genera once blended in *Serratula* (as so many other G. are in all akin) include a crowd of fine plants deserving a good monograph. Of *Liatris* our compilers have 18 sp. but I know many more, several being yet blended as varieties, and as they offer various inflorescence must be divided at least in 4 or 5 subgenera: of *Vernonia* only 10 are in Eaton, my *V. albiflora* and *missurica* described at l. j. 1833 are omitted, and I have many more N. sp. *Vern. longifolia*, *latifolia*, *brevifolia*, *crinita*, *humilis* &c. I shall merely add here the subg. of *Liatris* and a few N. sp.

927. **LIATRIS** Aiton.—1 Subg. *Scariola* Raf. perianthe squarrose ovate or hemispherical, multiflore, pappus hardly plumose, flowers chiefly racemose or spicate, root bulbose—2d. *Teretiola* perianthe oblong or terete imbricate adpressed, multiflore, flowers terminal few, root bulbose—3d. *Osmilis* R. per. hemisph. adpressed multfl. pappus scabrous not feathered, flowers corymbose or terminal, root not bulbose—4th *Rhodilis* R. per. terete 5flore few scales colored, ligulate pappus really feathery, fl. racemose, root bulbose—5th *Euthyrsis* R. per. oblong 5flore, few scales adpressed, flowers thyrsoidal, root not bulbose—6th *Corymbilis* R.

per. campanulate adpressed pauciflore, fl. corymbose, root not bulbous &c.

928. *LIATRIS* (Osmilis) *AMPLEXICAULIS* R. stem grooved, leaves 5nerved obtuse, radical sessile ovate elliptic, on stem ovate amplexicaule; flowers corymbose, segments of perianthe cuneate obtuse—a fine odorous sp. blended with *L. odoratissima*, same exquisite smell like Tonga beans, but weaker bipedal, with broader shorter leaves 2 or 3 inches long, many smaller flowers. The true *L. odoratissimum* has radical leaves lanceolate acute uninerve 6 to 10 inches long, on stem sessile short cuneate or oblong, few branches uniflore, perianthe foliose segments obovate. In Florida & Georgia.

929. *LIATRIS* (Scariola) *BOTRYS* R. stem angular rough, leaves smooth scattered linear lanceolate acute, lower longer petiolate, upper subulate; flowers racemose, peduncles longer than flowers somewhat scaly, bracts subulate, perianthe hemispherical, segments obovate obtuse margin red—a very pretty sp. of Florida and Georgia, more distinctly racemose than in any other, pedal lower leaves 4 to 6 inches, upper uncial, raceme as long as stem multiflore, flowers lax rather small but elegant, styles very long.

930. *LIATRIS* (Scariola?) *UNIFLORA* Raf. smooth, stem angular grooved uniflore, leaves rigid linear lanceolate acute sessile, the lower elongate, trinerve middle nerve very thick; perianthe ovate base foliose segments ovate acuminate squarrose—from Kentucky to Alabama, pedal, leaves nearly imbricate the lower 5 or 6 inches long. Deviating from *Scariola* by single flower, perhaps a subg. *Rigidilis*; but very akin to my *L. rigida* differing only by 2 or 3 flowers, leaves scabrous stem pilose.

931. *VERNONIA BREVIFOLIA* Raf. stem grooved pubescent below smooth above, leaves short oblong, margin subentire revolute, very scabrous above, pubescent and glaucous beneath; flowers subumbellate few, segments of perianthe lanceolate acuminate squarrose—in Alabama near to *V. baldunii*, which has however leaves ovate serrate, here they are oblong, broader below, or subcuneate, narrow above nearly lanceolate, only uncial; flower in a irregular umbel of about 10 flowers, naked, stem bipedal or less.

932. *VERNONIA CRINITA* Raf. smooth, stem grooved, leaves narrow lanceolate elongate with remote obtuse teeth; corymb foliose, perianthe crinite by long lax subulate filiform segments—in Louisiana and Arkansas near streams a tall sp. leaves 5 to inches long, only half inch broad in the middle, acuminate at both ends and sometimes falcate: flowers large perianthe hemispherical multfl. segments nearly all equal slender and forming a fringed cup as long as florets.

933. *MARSHALLIA SPIRALIS* Raf. smooth subscapose, leaves radical linear lanceolate obtuse uninerve, scape elongate *spirally grooved*, pubescent above, perianthe segments linear obtuse smooth—in Arkansas and West Louisiana found by Binder, near to *M. lanceolata*, but quite distinct, leaves narrower 3 inches long, scape twisted as some *Xurides* (not so in *M. lanceolata*) pedal, flower large incarnate.

934. *MARSHALLIA TENUIFOLIA* Raf. stem simple virgate grooved, naked and pubescent above, leaves scattered all narrow linear elongate acute perianthe segments linear acute pubescent—found by Baldwin on the sea shores of Florida

and Georgia, nearer to *M. cyananthera* than *M. angustifolia*, but leaves quite slender uninnerved smooth, anthers also bluish—thus we have 6 sp. of this pretty G. a 7th might be my *M. pumila* now my G. *Therolepta* Neog. 1825.

EUPATORIUM and akin

This extensive G. is now divided into many *Celestina*, *Brickellia*, *Mikania*, *Kuhnia* &c, besides my *Eutrochium* with scarious terete perianthe, leaves verticillate &c, my *Caradesia* with perianthe hemispherical multiflore: thus reduced to the sp. with a definite number of florets and segments of perianthe, it is still prolific. The American *Cacalias* are very near, but form 3 peculiar Genera, my *Epatitis* 205, *Mesadenia* and *Hasteola*.

935. **MESADENIA** Raf. perianthe 5flore, terete with 5 equal segments, phoranth with a thick gland in the centre and 5 flowers around it. (this gland is an abortive neutral floret sometimes evolved) caliculus obsolete or only a small scale, florets with tubular limb deeply 5d, anthers inclosed, stigmas 2 or 4 hardly exerted, seeds smooth oblong or clavate, pappus downy capillary. *Perennials, leaves alternate large thickish, flowers white corymbose or paniculate.*—A north American G. of many sp. quite distinct and natural by the singular structure of phoranth, noticed by Elliot and Nuttall, the central gland is variable ovate acute, or angular tridentate, or seldom changed into a neutral floret which has then the ovary dentate instead of downy. I have even noticed some flowers where there was only this neutral floret in the perianthe, lacking anthers and style, another anomaly is the quadruple stigmas of some florets, This G. is nearer *Kleinia* than *Cacalia*. Akin

also to my *Chondrophora* (the *Chrysocoma nudata* of N.) with a scaly phoranthé &c.— I have prepared a monograph of 15 sp. whereof 9 are my own, *M. dentata*, *rotundifolia*, *oblongata*, *quinquefida*, *cuneata*, *pulverulenta*, *lobata*, besides my *Cacalia pteranthes* and *paniculata* of annals Nut. 1820, the old sp. are *M. atriplicifolia*, *reniformis*, *ovata*, *lanceolata*, *plantaginea* (the *C. tuberosa* of N.)—as to the *Cacalia suaveolens* L. which Elliot refers to *Senecio*, it is my *G. Hasteola* distinguished by the anthers cristate. I will only add here a few of my N. sp.

936. **MESADENIA ROTUNDIFOLIA** R. leaves rounded 3-5nerved entire or repand glaucous beneath, lower on long petiols, obtuse or retuse, upper sessile acute, flowers corymbose, segments of perianth oblong obtuse enerve, margin white—In the Musketong and Mahantango Mts. of Alleghanies, 2 or 3 feet high, lower leaves 3 or 4 inches long and broad with 5 nerves reticulate, petiols 4 to 8 inches long, upper leaves uncial.

937. **MESADENIA DENTATA** R. leaves broadly ovate acute and acutely dentate 3-5nerved not glaucous, lower on short petiols, on stem sessile acuminate, flowers in compound corymb, segments of perianth oblong acute subtrinerve—in Alabama, very different from *M. ovata* with obtuse narrower leaves. Tripedal, leaves 4 to 5 inches long, 3 or 4 broad, petiols 2 or 3 long, stem leaves 1 or 2 inches long, corymb with many branches and multiflore.

938. **MESADENIA PULVERULENTA** R. leaves petiolate 5nerved glaucous pulverulent on both sides, lower on long petiols broadly cordate acute angular, upper ovate or rhomboidal acute at

both ends, angular sinuate; corymbs fastigiate, segments of perianthe lanceolate uninerve margined—in the state of Delaware, 3-4 feet high, lower leaves 4 to 6 inches long and broad, petiols as long, on the stem uncial &c with a short petiol, variously cut in long sharp angles. The *M. atriplicifolia* has leaves deeper cut, the upper deltoid, the *M. oblongata* has radical leaves oblong cordate obtuse.

939. *EUPATORIUM CINEREUM* Raf. pubescent cinereous, stem striate corymbose above, leaves alternate sessile, on stem lanceolate obtuse, bidentate lateraly, on branches linear entire obtuse; corymbules many pauciflore, perianthe 5flore, cinereous, segments elliptic obtuse calicule ovate obtuse—in Alabama &c, tripedal, stem at base redish with cinereous pubescence, lower leaves greenish, upper ashy like the flowers, seeds black hispid, pappus cinereous.

940. *EUPATORIUM FULVUM* Raf. roughly pubescent, stem simple terete grooved, leaves opposite sessile oblong lanceolate serrate, acute at both ends, roughly punctate; corymb fastigiate, pedicels hairy white, bracts linear, perianthe oblong pauciflore, segments lanceolate acute glandular punctate, end fulvous membranaceous—in Alabama &c, near to *E. glandulosum* of Mexico but leaves not ovate, habit of *Kuhnia* but pappus not plumose, stem 1-2 pedal, leaves 2-3uncial, flowers fulvous before expansion.

941. *EUPATORIUM* or *CARADESIA PAUCIFLORA* Raf. Hispidule humble, leaves thin on long petiols ovate crenate, both ends acute; flowers terminal few 5-6, perianthe campanulate multiflore, segments lanceolate acute unequal—Louisiana and Mississipi found by Dr. Hart,

semipedal, leaves small entire at base, corymbule foliose, flowers white incarnate.

I have many other doubtful or rare sp. of this G. 3 were described 1832 in atl. journal *E. serratum*, *pectinatum*, *rupestre*, some are in Florula Ludoviciana; as to *Entrochium* I have prepared a monograph of it with many new species.

HELENIMUM of this G. I have 7 sp. and 10 varieties while our botanists admit only 3.

942. **HELENIMUM DISCOVATUM** R. smooth stem dichotome angular, leaves subdecurrent linear lanceolate acute entire uninerve, flowers on long naked peduncles, rays short flat, disk ovate concolor—this was labelled a *Rudbeckia* in Coll. herb. but is a real *Helenium* with trifid obtuse rays, bipedal, branches virgate, leaves uncial, flowers smaller than in others. In Florida.

943. **HELENIMUM ANCEPS** R. stem compressed striate pubescent with 2 broad wings, leaves decurrent oblong lanceolate acute entire smooth trinerve, flowers corymbose few, rays flat reflexed, disk globular concolor. In Florida and Georgia found by Leconte, anonymous in Coll. herb. pedal, leaves uncial, flowers large.

944. **HELENIMUM FLEXUOSUM** R. smooth, stem ramose angular winged, branches flexuose, leaves decurrent lanceolate acute entire uninerve, flowers paniculate, rays flat reflexed, disk globular discolor—can this be *H. canaliculatum*, but the leaves are not serrate, nor rays grooved. Found on R. Wabash, bipedal, leaves 1 or 2 inches, flowers middle size, discolor redish, not yellow as in other 5 in centre.

945. **HELENIMUM DICHOTOMUM** R. pubescent rough, stem dichotome corymbose striate wing-

ed, lower leaves sessile cuneate remotely obtuse serrate, not trinervate, upper leaves decurrent lanceolate acute subcrenate, rays grooved? disk globose discolor—another sp. akin to *H. canaliculatum*, but not smooth nor properly serrate, stem bipedal quite dichotomous above, lower leaves 3 inches long, upper uncial, disk redish as in last, found in West Kentucky.

946. *HELENIUM TRAXILUM* R. nearly smooth, stem angular striate hardly winged, leaves sub-decurrent lanceolate elongate, both ends acuminate, margin entire very rough; flowers corymbose, rays flat reflexed, disk globose concolor—found in Indiana and Illinois, pedicel, leaves large 2 or 3 inches long pale beneath, flowers few small.—*H. autumnale* nearest to this has serrate smooth leaves, and several varieties, *angustifolium*, *latifolium*, *levigatum*, *brevifolium*, *longifolium*, *elatum*, *pauciflorum* &c.

GLOSSANTHES

This family also called *Cichoracea* and *Semiflosculose*, has been stated to be very deficient in North America; but it is a mistake, 5 Genera alone *Lactuca*, *Eunoxis*, *Hieracium*, *Narbalia* and *Krigia*, include nearly 100 species; being as numerous as the Asters, they have been equally involved in obscurity by blending or overlooking sp. which require careful monographs, such as I have undertaken; but must delay at present and only give a few striking novelties, as I wish to confine this flora to 1000 articles at present. This continent is the central seat of *Lactuca* as it is of *Vitis* and *Quercus*, possessing 30 or 40 species of each. The *Lactuca elongata* of our blind botanists contained 12 or 15 sp. with leaves smooth or rough, entire or pinnatifid, runcinate, sagittate, den-

tate, sessile, amplexicaule, flowers spicate or racemose or paniculate ! &c, &c.

947. *LACTUCA ANGULATA* R. smooth gigantic stem fistulose, leaves pinnatifid broad, sinusses wide and angular. pinnules ovate angulate dentate acute, base of nerves roughish, lower subpetiolate angular ; flowers paniculate, pedicels inequal, bracts subulate—Pennsylv. to Kentucky &c stem 5 to 8 feet high, very thick, leaves ample thin pedal below, flowers very numerous.

948. *LACTUCA MARITIMA* R. smooth, stem simple fistular, naked above, all leaves pinnatifid sessile, pinnules remote unequal lanceolate angular ; flowers racemose lax few—on the Sea Shores and Sea Islands from Long Island to Virginia, stem bipedal purplish, leaves 3 or 4 inches long slender, radical and on base of stem only, how different from last.

949. *LACTUCA AXILLARIS* R. smooth, stem fistulose foliose, lower leaves ample sessile ovate lyrate lobate, sinusses rounded entire, lobes rounded dentate, upper leaves lanceolate entire flowers in axillary spikes—Mts. Alleghanies, stem bipedal fuscate. leaves 2 or 4 inches long, flowers really spicate sessile.

950. *LACTUCA OVATIFOLIA* R. nearly smooth, stem solid striate, leaves sessile ovatoblong equally denticulate, middle nerve rough, lower attenuate at base, flowers paniculate, peduncles scaly—in New Jersey and Pennsylv. stem fuscate 2 or 3 feet high, leaves 2 or 3 inches long, veins reticulate.

951. *LACTUCA PILOSA* R. stem fistular, base pilose, naked above, leaves all sessile lanceolate denticulate, beneath glaucous and subpilose, lower elongate attenuate into a petiol, flowers

subracemose few and small—Apalachian Mts. of Virginia and Carolina, different from *L. hirsuta* by leaves entire, the lower 6 to 8 inches long, stem 2 or 3 feet high.

952. *EUNOXIS* (*Agathysus*) *AMABILIS* Raf. smooth, stem subsolid terete, leaves sessile ample ovate acute angular or denticulate, lower base decurrent cuneiform, floral oblong subentire, branches racemose paniculate pyramidal, peduncles elongate naked, flowers blue, pappus white—Mts. Alleghany, 4 to 5 feet high, leaves 4 to 10 inches long, a profusion of pretty blue flowers. I have changed *Agathysus* name already preoccupied for a G. of shells for *Eunoxis* an ancient name of Lettuce, and I give this sp. as a specimen out of a dozen sp. that I possess, the color of flowers and pappus is specific in this Genus.

953. *NARBALIA LATIFOLIA* Raf. smooth, stem terete flexuose, leaves broad thin petiolate glaucous beneath subdentate, lower on long petiols deltoid hastate broader than long, trinerve, lobes divaricate deltoid acute, upper leaves ovate acuminate, racemes axillary, perianthe 5flore 5parted—in Mts. Alleghanies, stem 2-3pedal, whitish sometimes rubicund, radical leaves with petiols one foot long, leaf 10 inches broad 8 long, upper leaves 2 or 3 inches long, flowers white drooping, perianthe incarnate. The previous good name *Narbalia* of Cassini adopted by Hooker must prevail over *Harpalyce* of Don adopted by Beck later and formed from *Harpa* a shell. Even the G. must be divided, I give this as an instance of the real *Narbalia*, of which I have 25 species, those with multiflore perianthe form my next Genus; while the *Pre-nanthes tenuifolia* and *pauciflora* of Torrey

with plumose seeds are my *G. Ptiloria* of 1833 Atlantic Journal.

954. *OPICRINA* Raf. diff. from *Narbalia*, perianthe 10-15 segments commonly hirsute, multiflore, with 20 to 30 flowers indefinite—these are taller plants, exuding a milk intensely bitter, producing a bitter opium which the name implies; the types are *Op. crepidinea* and the next.

955. *OPICRINA LATIFOLIA* Raf. *Prenanthes opicrina* 1822. smooth, stem grooved ramose, lower leaves with winged petiols cordate or sagittate ovate, sinuate angular, upper ovate repand or denticulate; flowers in racemose panicles fasciculate, perianthes nodding hirsute, pappus fulvous—in Central Kentucky rich woods, 5 to 6 feet high, leaves 4 to 10 inches long, flowers large ochroleucous, perianthes fuscate. *Op. crepidinea* differs by leaves sessile oblong lanceolate unequally dentate, (*Op. angustifolia* would be a better name.

956. *SITILIAS* Raf. perianthe terete double multiflore both multipartite, external shorter adpressed, phoranthé naked, seeds smooth linear oblong grooved, pappus long stipitate simple capillary silky fulvous.—*Caulescent, flowers few.*—This *G.* differs from *Leontodon* by pappus not plumose, from *Borkhausia* by terete adpressed perianthe and costate seeds. It was shuffled into 4 Genera! *Leontodon*, *Borkhausia*, *Scorzonera*, *Chondrilla*! and now must form a 5th, the name was an ancient of *Hieracium* of which it has the habit—Type *S. CAROLINIANA* Raf. *Borkausia* do Elliot, see his synonymy and description, wherein he has probably blended the next Genus also. My specimen

from Alabama, has oblong leaves with long teeth and only 2 flowers yellow.

957. **CRENAMON** Raf. diff. from *Sitilias* by outer perianthe unequal, pappus plumose, seeds curved compressed tessellate by longitudinal and transverse stria, *scapose*, *corymbose*—nearer to *Picris* than any other G. the name was that of Adanson for *Picris*, but different by perianthe really double as in last and seeds not rugose transversely alone but tessellate, besides habit *scapose*.

958. **CRENAMON PECTINATUM** Raf. smooth, leaves pectinate pinnatifid obtuse, very long and narrow, base attenuate entire, pinnules remote narrow obtuse, scape grooved *corymbose* 3-6-flore, peduncles very long with subulate scales.—Apalachian Mts. Unaka, leaves 6 to 8 inches long, hardly half inch wide, pectinate like the horn of the Saw-Fish, scape pedal, flowers yellow, perianthe acute, outer rather unequal.

959. **KRIGIA PETIOLARIS** R. stem flexuose foliose striate pauciflore, leaves all petiolate oblong or obovate minute dentate lacinate, peduncles filiform, perianthes linear—in Alabama, 3 to 6 inches high, leaves only half inch or less, petiol uncial or longer, flowers small few, not rigidly erect as in *Kr. virginica*.

960. **KRIGIA INTEGRIFOLIA** R. stem erect foliose grooved uniflore, leaves glaucous entire all dissimilar, radical petiolate elliptical obtuse or obovate acute, on stem amplexicaule acute, ovate or lanceolate, perianthe lanceolate—Mts. Alleghanies, how different from last, nearer to *Kr. amplexicaulis* but smaller with entire leaves, one small flower pale yellow, not orange color. Semipedal, leaves 1 to 3 inches long, all

different in shape, yet all entire,—of this difficult G. once blended in *Hyoseris*, we have 12 or 15 sp. and many varieties, difficult to distinguish: the G. *Achyrastrum* Necker and *Cynthia* Don, appear the same; if different they must be better distinguished—as to *Aposeris* Necker with naked seeds, it differs but little from my *Laxanon* 203, of which it appears *Apogon* of Elliot is a 2d sp. his name was pre-occupied for a fish. Our Hieraciums must perhaps be divided, I had formed the G. *Ophioseris* with many, but the 4 G. of Necker out of Hieracium must be verified and restored, they are *Aracium*, *Plancia*, *Willemetia*, and *Miegia* now occupied by a grass.

961. POLYGALA, this G. now forming a vast family must be divided by flowers and habit, as was suggested by many botanists. I did so long ago, proposing *Triclisperma*, *Psychanthus*, and *Muraltia* with many subgenera, that must soon become as in any Genera, I shall merely enumerate them here, reserving my labor on this family for a monograph.

1. POLYGALA stamens 8 diadelphous, corolla cristate.

2. MURALTIA Necker 1790, differs by corolla not cristate, once *Heisteria* of L. not of Jaquin, since adopted by L. type P. *senega* &c.

3. TRICLISPERMA Raf. 1814, type P. *pau-cifolia* &c.

4. PSYCHANTHUS Raf. 1814, type P. *myrti-folia* &c.

5. SEXILIA R. stamens 6 sessile, corolla bilabiate cristate, type P. *verticillata* and all whorled species, chiefly annuals.

6. PLOSTAXIS R. stamens 4, cor. fimbriate, fl. capitate, type P. *lutea* &c.

8. **ANTHALOGEA** R. *stam.* 7-8, *cor.* 3lobe fimbriate, stigma subsessile bilabiate, plumose on upper lip, some flowers deficient, type *P. polygama*.

9. **CORYMBULA** R. flowers corymbose.—Subg. or Genus?

10. **ZOROXUS** R. *Chamebuxus* T. flowers solitary. Ditto?

962. **ASEMEIA** Raf. diff. *Polygala*, calix 4-5phyle, 2 sepals internal larger wing like, corolla cariniform base hirsute, subtrilobe, tip tuberculate. Stamens 8 monadelphous very short anthers unilocular. Style elongate bearded above, stigma obtuse, capsule oblong semi-alate, cells monosperm, seeds hispid. *Habit of Polygala, perennials, racemose leaves fl. alterne.*—I give one of my N. G. very distinct from *P. senega* and akin, altho' same habit, the name means without vexillum.

963, **ASEMEIA ROSEA** R. *Polyg. pubescens* Mg. *E. viridescens* Walt. pubescent, stem hardly angular, branched, leaves linear lanceolate acute, calix 4phyle, wings obovate—in Carolina and Florida, pedal, pretty sp. flowers rose color, leaves uncial, racemes terminal lax, bracts subulate, short.

964. **ASEMEIA CARNEA** Raf. smooth, stem simple angular leaves linear cuneate acute, calix 5phyle, wings ovatooblong—in Alabama and West Tennessee, probably blended with the last, pedal, leaves shorter, the lower cuneate and even obtuse, flowers pale flesh color or white with a pink tinge.

965. **ASEMEIA ALBA** (or *leptopsis*) Raf. smooth, stem simple angular virgate naked above, leaves narrow linear, upper subulate, raceme spiked, flowers imbricate, calix 5phyle? wings obovate

—in Arkansas and Texas, perennial, pedal slender, leaves very narrow half uncial, raceme terete uncial, flowers white small, on short pedicels almost imbricate, bracts lanceolate: this sp. may be a *Muraltia*, I cannot determine the stamens.

966. *POLYGALA* (*Sexilia*) *MISSURICA* Raf. stem branched diffuse 4gon, leaves quaternate and opposite broad lanceolate smooth, base acute, end mucronate; spikes terminal oblong imbricate—in the prairies of Missouri and Illinois, 3 to 4 inches high, leaves larger and broader than in others, flowers white, not in filiform spikes. Annual.

967. *POLYGALA* (*Muraltia*?) *RUGOSA* Raf. stems angular prostrate, leaves alternate rugose lower cuneate obtuse, upper linear cuneate acute, flowers in slender spikes—on Lake Michigan, humble, 3 to 6 inches long, leaves less than one inch, flowers red, sessile in short spikes; but very imperfect in my specimen, probably a *Muraltia*.

968. *POLYGALA* OR *PILOSTAXIS* *HYEMALIS* Raf. stemless, leaves all radical obovate obtuse capitule sessile squarrose oval, bracts lanceolate membranaceous as long as flowers—this and the next are blended in *P. lutea* var. *nana* of Mx. but quite unlike our *P. lutea* of New Jersey. Found by Baldwin and Nuttall in Florida and Georgia, blossoming in January, leaves unequal uncial often spatulate, heads shorter than leaves, flowers greenish, root annual.

969. *POLYGALA* OR *PILOSTAXIS* *NANA* Raf. subscapose, leaves cuneate and oblong, obtuse and acute, stem short with 1 or 2 leaves lanceolate, head oval squarrose, bracts subulate elongate, wings lanceolate acuminate—in Florida found

by Ware in 1821. Stem 2 or 3 inches high, leaves half inch long, head large, flowers greenish. I have a var of *P. lutea* near this same size and habit, but with few leaves narrower, heads depressed, flowers really bright yellow, wings broader obovate acuminate: it will be my var *paucifolia*, and they all evince a tendency to deviate from *P. lutea*.

GENTIANIDES.

This lovely family of plants was in utter confusion, as I have proved in rectifying it, in fl. tellur. 435 to 500, where many N. G. and sp. are established. I have also restored the *G. Anthopogon*, *Pneumonanthæ*, *Dasistepha*, *Ciminalis*, *Cicendia*, *Tretorhiza* &c of former botanists, neglected by the linnean blenders. I there gave also some new N. Amer. sp. and I still mean to give hereafter their complete monograph, our species have been increased lately by myself and Hooker to 50 or 60, while Linneus had only half a dozen of this continent. I now must merely add some other interesting novelties.

970. *ANTHOPOGON INCARNATUM* Raf. *Gentiana purpurea* Muhl. fl. lancast. Coll. herb. stem humble branched, branches compressed sub4-gone uniflore, leaves lanceolate, acute, lower subcuneate, calix 4gone, segments ovate lanceol. acum. margin colored, 2 alt. narrower, corolla ciliate twice as long—another beautiful sp. of this fine G. discovered by Muhlenberg since 1790, found by myself in the Alleghanies 1804, since omitted or mistaken for a variety by our botanists (myself included) but now restored and fixed, only 6 to 10 inches high, with several erect branches, leaves uncial, narrower than in *A. crinitum*, broader than in *A. virgatum* fl. tel.

472, flowers size of the first, but of an incarnate color, instead of blue, the calix is margined of same color. Autumnal.

971. *ANTHOPOGON ALBESCENS* Raf. stem terete trifid, leaves patent narrow lanceolate acute, peduncles terete, calix deeply 4fid, segments ovate lanceolate obtusely acuminate, 2 narrower lanceolate, corolla hardly longer than calix unequally denticulate—in Louisiana, collected by Riddel, sent me anonymous, very distinct by smaller shorter flowers nearly white or blush color, leaves nearly as in *A. virgatum* but broader and spreading, 2 inches long, flower only uncial.

972. *ANTHOPOGON BREVIFOLIUM* Raf. humble, uniflore? foliose anceps, lower leaves cuneate or spatulate acute, upper ovatooblong short acute, calix with segments shorter ovate lanceol. acutely acuminate, corolla double of calix fringed—in Mts. Alleghanies of Lycoming Cy. Pennsylv. blossoming in November, stem 4 to 6 inches high. leaves very short 4 to 6 lines long and reaching to near the flower, which is small though elongate uncial, apparently incarnate in the specimen, nearer to *A. incarnatum* than to *A. crinitum*, perhaps a variety of it.—*A. crinitum* differs from all my 4 sp. by leaves ovate lanceolate subdeltoid, flowers large with rounded segments deeply fringed, peduncles naked 4gone &c. All belong to the *G. Anthopogon* of Necker 1790, and have the calix unequal as in the whole family.

973. *PLEIENTA QUINQUENERVIA* Raf. stem terete trichotome. leaves broad oblong lanceolate acute thin 5nerved; flowers corymbose, calix base membranose, 6-7parted, segments foliose lanceolate, subequal to corolla segments

oblong obtuse—in Louisiana, sent me by Ridel as *Sabatia gracilis*? pedal, not slender, foliose, leaves large often 2 inches long, flowers few white terminal, peduncles thick erect uncial. My *G. Pleienta* fl. tel. 497 includes all the *Sabatias* with unequal multiple calix and corolla, 6-12 stamens, style erect.

974. *PLEIENTA LEUCANTHA* R. slender 2-3cho-tome branches aniceps, leaves lanceolate acute hardly trinerve, flowers on long peduncles, calix 8-10parted linear, corolla double of calix, segments cuneate obtuse—this is the *Sab. gracilis* of many botanists, but not of all, the true one not being a *Pleienta*! on Sea Shores from South New Jersey to Florida, pedal, leaves uncial, flowers large and fine, sometimes 2 inches wide

975. *SABBATIA*? *NERVOSA* Raf. ramose pauciflore, branches aniceps, leaves ovate lanceolate trinerve acute, peduncles axil. and terminal, calix base campanulate 5gone, segments linear elongate nervose, corolla as long as calix, segments broad obovate, trinerve at base—anonymous sp. of Nuttall, which deserves perhaps to be a genus *Neurola* Raf. by calix 5gone corolla nerved, stamens rolled up but not twisted, style declinate and with linear stigmas as in *Sabbatia*. From Arkansas, 8 inches high, leaves small remote semi-uncial, flowers large over uncial incarnate? *Neurola arkanzica* will be a better name.

976. *BILAMISTA* Raf. calix deeply 5parted subequal, corolla marcescent tube campanulate 10nerved, limb rotate 5parted, glandular appendages at the sinusses, stamens 5 free equal filaments subulate exerted, anthers oblong 2locular, ovary compressed, style flexuose persis-

tent, stigma bilamellate broad, capsule elliptic 2valve unilocular, polysperme, seeds scrobiculate inserted on 4 large placentas. *Perennial, ramose, flowers axil. pedunculate*—I now add another beautiful N. G. to the Gentianides: it is next to *Swertia* and *Narketis*, but with the calix and corolla of *Sabatia* &c. My *Narketis* fl. tel. 477 based on various sp. of pentandrous *Swertias* included even several G. this, another my *Synallodia japonica*, with 2 stamens united, formed by *Swertia rotata* of Thunberg; and *Gentiana pratensis* with very unequal calix and no appendages? perhaps another *Leimanisa* R. the name of this applies to the large bilamellate stigma, it shows beautifully the opposition of stamens essential to the Gentianides.

977. **BILAMISTA GRANDIFLORA** Raf. *Gentiana* do Coll. herb. *ramose* 2-3dichotome, branches fastigiate terete rugose, leaves ovatoelong acute trinerve; peduncles axillary and terminal rigid angular, calix segments subulate, corolla thrice as long, segments obovate obtuse—fine robust plant of Red river Louisiana and Arkansas, sesquipedal, leaves biuncial, flowers white? (fulvous in dry specimen and leaves blackened) very large 2 or 3 inches wide, nearly marcescent and persistent like the style; capsule large very peculiar black rugose, seeds numerous minute dotted: the glandular appendages are minute somewhat crested and at sinusses instead of segments.

I have not yet exhausted the N. G. and sp. of this family, there are still others blended in *Swertia*, *Exacum*, *Chironia* . . . and many unnoticed sp. of *Sabatia*, *Pleienta*, *Xolemia* . . .

see my medical flora and fl. tellur. for some of them.

LABIATES.

In this family much remains to be done even after the labors of Bentham and mine in fl. tellur. Our *G. Pycnanthes*, *Teucrium*, *Brunnella*, *Lycopus*, *Mentha*, *Salvia*, *Monarda*, *Scutellaria* &c are yet susceptible of revision and improvement. My *G. Euphemus* 1830 Med. fl. for *Lycopus Virginicus* and akin sp. must be admitted like my *Blephilia*, *Vleckia*, *Blephiloma* and others of fl. tellur. I shall only add now a few presumed new species, others are in 2d part of this work.

978. *MENTHA CINEREA* R. cinereous pubescent, leaves subsessile ovatooblong acute sharply serrate, spikes terminal verticillate naked, bracts subulate equal to flowers. stamens included—in the Welsh Mts. of Alleghanies in Pennsylv. discovered 1801 again 1831, habit of *M. tenuis* less odorous, root creeping, many stems erect, pedicel almost hirsute, leaves uncial quite cinereous beneath, less above, spikes short, flowers small white, calix and bracts cinereous almost canescent.—I have several other sp. of Mint, *M. capitata*, *M. dentata*, *pectinata*, *ciliata*, *trachiloma* &c, but some are doubtful, and the two last belong to *Pulegium* like *M. canadensis* and *borealis*.

979. *VLECKIA BRACTEATA* R. leaves petiolate cordate acute grossly serrate, spike sessile bracts also and ovate acute foliose longer than flowers—in Florida, pedicel, stem fuscate, leaves uncial not large, spike sessile, rather short, bracts large remarkable. This perhaps may form a subg. the habit and flowers are of *Vleckia*, but calix more campanulate striate with very unequal teeth, *Psalion* Raf. see fl. tel. 786.

980. *PYCNANTHES SAXATILIS* R. stem ramose tomentose, angles obtuse, leaves glaucous subpetiolate ovate acuminate remotely serrate, hardly pubescent punctate reticulate on both sides; heads terminal sessile, bracts and calix lanceolate mutic canescent tomentose—in the Alleghany Mts. near the R. Susquehannah among stones and rocks, 1 or 2 feet high, branches patent, leaves ultra uncial, capitules multiflore, stamens not exerted.—A var. *cuniloides* has stem smaller, leaves subsessile smaller sometimes subentire. Subg. *Brachystemon*.

981. *PYCNANTHES PARVIFOLIA* R. smooth, stem branched acutely 4gone, leaves small subsessile ovatooblong entire, ending by an obtuse callose point; heads terminal sessile lax dichotome, bracts lanceolate nervose, the nerve protruding in a long stiff fulvous bristle, calix bristly—a very distinct sp. found by Leconte in Florida and Georgia, anonymous in Coll. herb. pedal, while leaves 4 to 6 lines long, bristles of bracts as long as them formed by the nerve extending out. Very different from *P. aristata*, stamens not exerted. Perhaps a peculiar subgenus *Xetalix* R. with all aristate sp. here the calix is equal else it would be a *Tullya*, lower lip of corolla equally trilobe, lobes short rounded upper entire? as in *Tullya*.

982. *PYCNANTHES CILIATA* R. stem branched pilose 4gone, leaves subsessile glaucous lanceolate elongate acute at both ends subentire, smooth, margin and nerves ciliate, heads terminal sessile canescent pilose lax, bracts and calix subulate aristate bristles ciliate—in N. Jersey pine barrens and Maryland, noticed since 1802, deemed *P. aristata* by some, nearer to *P. pilosa*, having both they are very different from

this, bipedal, leaves biuncial, inflorescence as in last, but bristles not rigid plumosely ciliate, corolla with upper lip emarginate, lower with 3 elliptic lobes unequal. Probably another subg. also *Blephixeta* Raf.—I have several other doubtful N. sp. of this G. Pycn. *scabra*, *glandulosa*, *laxiflora* &c.

983. *BLEPHILIA BREVIPES* R. stem fistulose hardly angular hirsute chiefly near the nodes, leaves on short petiols upper sessile, ovatooblong nearly obtuse subserrate, smooth, nerves pubescent; whorls densiflore, bracts and calix hirsute lanceolate aristate—Alabama, leaves uncial, the floral are quite sessile, flowers white incarnate. One of the sp. blended in *Monarda hirsuta*, the real sp. is my *Bl. nepetoides*, a 3d is the next.

984. *BLEPHILIA LANCEOLATA* R. stem deeply 4grooved quite hirsute, leaves well petiolate lanceolate, base acute, end acuminate, margin remotely serrulate; flowers shorter than petiols, bracts and calix lanceolate ciliate with long filiform bristles—in Kentucky, Indiana, Illinois, discov. 1818, well distinguished from *Bl. nepetoides* with broad leaves and white flowers, by the narrow leaves and flowers pale incarnate, a large plant 3 to 4 feet high, much branched, lower leaves often ovate lanceolate, whorls 3 to 5, the last without leaves.—There are also 3 sp. blended in *Monarda ciliata*, my *Bl. pratensis*, *brevifolia* and *heterophylla*.

985. *TEUCRIUM LEVIGATUM* Raf. quite smooth, stem with 4 thick obtuse corners and 4 grooves, leaves subsessile broadly lanceolate acuminate subequally serrate; raceme sessile lax oblong, bracts lanceolate equal to calix smooth angular.—One of the sp. blended in *T. virginicum*, that

few botanists can distinguish from *canadense*, and as both names neither apply nor convey any meaning, I propose to abolish them, and give 7 good names instead for the sp. therein blended: they all are really of this G. and have similar racemose habit. This has a yellow racemose stem sesquipetal, leaves 2 or 3 inches long spikes 3 to 6 inches long, flowers incarnate as in nearly all. Chiefly in Western States.

986. *TEUCRIUM PETIOLARIS* R. puberulent, stem with 4 grooves and obtuse angles, leaves on long petiols ovate acute, equally serrate, base acute entire; raceme pedunculate terete dense tomentose, bracts acuminate equal to calix, the lower ovate, calix canescent not angular---how different from the last! nearer to *T. canadense*, pedicel, leaves biuncial not tomentose nor white beneath, raceme quite separated from the leaves and compact. In New Jersey, Long Id. and Virginia, often on the sea shore and with radical surculi as in *Euphemus*, but this happens also in others. My *T. riparium* or *Canadense* has ovate leaves rounded at base, tomentose white beneath, shorter petiols &c.

987. *TEUCRIUM BRACTEOSUM* R. nearly smooth stem grooved, angles obtuse, leaves on short petiols, lanceolate unequaly serrate, acuminate; raceme foliose, flowers axillary to leaves and long bracts laciniate, upper entire, calix smooth not angular---another very distinct sp. pedicel, leaves 1 or 2 inches long, with flowers at the axils, pubescent beneath. In N. Jersey, Pennsylvania, Virginia, the *T. virginicum* of some botanists.

988. *TEUCRIUM LANCEOLATUM* Raf. and Collins, stem simple pubescent grooved, angles acute at both ends, subequally serrate, nearly smooth,

nerves pubescent, raceme sessile interrupted whorled, bracts subulate equal to calyx canescent tomentose not angular—nearest to *T. levigatum* and *T. virginicum* or rather my *T. obliquatum* with ovate oblique leaves petiolate, unequally serrate, pubescent beneath. This is found from New Jersey to Virginia, is pedicel, leaves biuncial narrow, root nodose creeping as in most species. It was noticed by Collins as a N. sp. .

989. *TEUCRIUM CINEREUM* R. ramose pubescent, stem grooved angles acute, leaves subpetiolate elliptic or broad oblong acute at both ends subequally serrate, beneath tomentose but not white; racemes elongate sessile slender, calyx scattered cinereous pubescent angular subsessile, bracts subulate equal—in East Kentucky and Tennessee the Cumberland Mts. and Cherokee Mts. large sp. bipedal, leaves 3 to 5 inches long, half as broad, raceme 6 to 10 inches long.—Thus our 7 *Teucriums* differ in stems, leaves, petioles, racemes, bracts and calyx, agreeing in nothing but creeping root, erect stems, serrate leaves and incarnate racemose flowers.

EUPHORBIDES.

Although I had revised and corrected the Genera blended in *Euphorbia*, in fl. tellur. 1168 1190, I have yet the pleasure to add now 2 N, G. of North America, that would have been referred thereto.

990. *ZALITEA* Raf. Dioical, perianth male campanulate 5fid, segments ovate acute erect, each having upon their base a lunulate gland. Stamens few short, several castrate or sterile filaments. Female . . . *Leaves opposite narrow petiolate, flowers axillary sessile*.—A singular G. perfectly new, anonymous in Collins

herb. with habit quite peculiar, next to *Lepadena* by glands opposite, but habit totally unlike and perianthe not 8fid. *Zalitea* was an ancient name of this family or *Polygonum*.

991. *ZALITEA LINEARIS* R. stem grooved 2-3chotome, leaves remote oppos. petiolate, linear, base acute, end mucronate, flowers subsessile, solitary in dichotomies and axils---annual smooth plant, erect? but weak, subpedal, leaves distant uncial, not obliquial, flowers small green with 5 ovate segments, acute which is unusual in this tribe, inner glands yellowish lunulate, ends obtuse concavity beneath. Seeds not seen but probably as in *Lepadena*. It grows on Red River of Louisiana, collected by Binder

992. *APLARINA* Raf. dioical and monoical, perianthes uniflore, male perianthe tubular, minutely 4lobe at top, lobes unequal ovate subserrate, a single stamen exerted borne upon a terete androphore, rudiments of some sterile. Female perianthe campanulate 8lobe, lobes subentire 4 alterne shorter. Capsule villose, stigmas 3 bilobe. *Habit of Xamesyke*.—Another G. remarkable by declinity and different perianthes, the male uniflore or monandrous. The name means *simple stamen*. There are many sp. of this G. blended in *Euphorbia*, I have lately noticed that *E. hypericifolia* probably belong to it.

993. *APLARINA PROSTRATA* Raf. prostrate pubescent, stems terete, dichotome, leaves petiolate obliquial ovatoblong acute, subserrate; flowers in axils solitary subsessile—annual, laying flat on the sand where it grows in Pennsylvania. blended by myself with the akin G. until the flowers well examined, and perhaps other sp. belong also here. Several stems 3 to 6 inches

long, leaves minute 2 or 3 lines long, flowers very small, green but lobes white.

994. *APLARINA?* *MICROPHYLLA* R. prostrate smooth, stems terete ramose, leaves on short petiols rounded subcordate obliquial entire obtuse or retuse; flowers solitary pedicelate—in Louisiana and Texas, same size, but leaves very minute only one line long, flowers few and so minute that I cannot analyze them, they are apparently campanulate 4lobed and male, no capsule being visible.

995. *SYNEXEMIA CUNEIFOLIA* Raf. stems erect simple, leaves petiolate adpressed cuneate acute, stipules subulate; flowers extra-axillary solitary or geminate pedunculate—Louisiana and Arkansas, stems humble 2 to 4 inches high, leaves 3 lines long, flowers minute. For my *G. Synexemia* 1825 (*Mascalanthus* Nut. 1834) see my Neogenyton and fl. tellur. 1191.

996. *ARKEZOSTIS* Raf. Cucurbitacea near *Melothria*, , diff. fl. hermaphr. and male, minute campanulate 5fid, ovary oblong constricted above, style with single stigma trilobed almost coadunate with 3 stamens monadelphous and syngeneses covering it. Male fl. still smaller, stamens subsessile. Berry oblong trilocular *trisperme!* *Habit of Melothria, but flowers and berries subsessile.*—A distinct *G.* probably blended in our *Melothria* chiefly different by 3 seeded berries sessile. It was once sent me by Dr. Short as the *Boykinia trispora* of Wray and Nuttall, but my *Theroson* (see 902) is the only *Boykinia* published by Nuttall. My name was a classical one of *Bryonia*.

997. *ARKEZOSTIS QUINQUELOBA* R. scandent roughish, stem striate, leaves petiolate cordate 5lobed, sinusses obtuse, lobes ovate acute re-

pand, middle lobe often trifid; flowers axillary geminate or ternate subsessile—in Florida and Georgia, where first discovered by Dr. Boykin and called *Melothria sessilis*, but never published. Stem slender 3 or 4 feet high, climbing with tendrils, leaves 2 or 3 inches broad and long, flowers green very minute, berries not seen probably oval and black as in *Melothria*.

SAMOLIDES.

I conclude by 3 new plants of this family of mine established 1815 . . . which is now greatly increased since all the *Houstonias*, some *Hedyotis* and several presumed *Rubiacea* will belong thereto. Decandole has by mistake deemed the *Houstonias* of *Gentianides* tribe, because he found the stamens *opposite* to corolla; but then *Samolus* which is lately put with *Primulacea*, should also rank with *Gentians*; yet the *Samolides* differ by adherent or inferior ovary as in *Rubiacea*, and these differ only by alternate stamens, essential character, little attended to till noticed by Jussieu in several families, but overlooked in *Houstonia* and *Gentians*. Every Genus with stamens isoperial or equal in number to segments of corolla, must be verified and ascertained if opposite thereto.—The *Oldenlandia* or *Hedyotis uniflora* is a *Samolides* and a peculiar G. my *Edrastima uniflora*. The O. or H. *glomerata* is another G. with unequal calix, my *Stelmotis glomerata*.

998. *HOUSTONIA BILOBA* Raf. dwarf dichotome leaves linear oblong acute, lower petiolate; flowers axillary, peduncles equal to leaves, corolla tube campanulate, limb patent, capsule compressed obcordate bilobe—in Arkansas, small plant 1 or 2 inches high, leaves 2 or 3 lines long, flowers red, segments of calix linear;

of corolla oblong obtuse, capsule almost like *Veronica*, but semi adherent, 2locular, polysperme, seeds reniform. Probably a subgenus, *ETOROTIS* Raf. meaning *eared heart*.

999. *HOUSTONIA GENICULATA* Raf. stem geniculate 4gone assurgent, leaves subfasciculate lanceolate acute, margin rough; flowers axillary solitary, corolla tube filiform, limb campanulate 4fid—on the Wasioto hills of Kentucky, annual semipedal, leaves uncial pale beneath, flowers purple, calix linear, tube of corolla double of calix. Another subgenus by peculiar corolla, I will call it *GONIOTIS*, I have not seen the capsule.

1000. *HOUSTONIA RETICULATA* Raf. stem geniculate 4gone erect, radical leaves petiolate obovate, on stem larger ovate acute trinerve, veins reticulate, margin rough, flowers terminal few corymbose, peduncles 1-3flore, capsule globose—Alabama, annual 3 to 4 inches high, akin to *H. purpurea*, but radical leaves different and smaller, on stem often uncial, calix adherent with two thirds of ovary, segments linear.—A var. *triflora* has only 3 flowers, some leaves oblong mixt, either obtuse or acute.

For other sp. of *Houstonias* see my monograph of 1820, it must form several subg. or even Genera. I have all our sp. *H. serpyllifolia*, *patens*, *rupestris*, *tenuifolia*, *longifolia*, *angustif.* *heterophylla*, *pubescens*, *purpurea*, *varians* &c and I may give another monograph of all the *Samolides*, of *Samolus* itself I gave one in my herbarium *Rafinesquianum*.

I must now conclude this Flora, although I have left many families untouched in which I possess many novelties; particularly in *Gratiolides*, *Acanthides*, *Personates*, *Scrophularia*,

Ludwigia, Oenothera, the Malvaceous, Cruciferae, Hypericines, Leguminosae, Verbenides, Caryophylles, &c, besides all the Monocotyles, Asphodelides, Helonides, Xurides, Grasses and Cyperides, Ferns and Cryptogams . . . which must be described in supplemental Monographs or peculiar additional works.

APPENDIX.

ADDITIONS AND CORRECTIONS.

In the course of such elaborate works, there are always some corrections to make, for names, synonyms or facts that have escaped attention: while additions might be lengthened ad libitum. Only a few will be stated here, being chiefly essential corrections.

IN FIRST PART—LEXICON.

1. ABALON. Add in syn. *Chamelirium* Wild. *Ophiostachys* Redoute: all names posterior to Abalon of Adanson 1763.—In 1837 Grey has made it a subg. *Chamelirium*! in *G. Helonias*! calling it *Hel. dioica* like Pursh, and he reduces *Helonias* to *H. bullata*! although quite different: he takes no notice of the synonym of Thunberg, *Melanthium luteum* of Japan, which is a third Genus blended my *Siraitos aquaticus* fl. tellur. 865.

2. ABAMA Adanson 1763 was perhaps previous to *Tofieldia* of Hudson (what date?) compare my monograph, with that of Grey 1837. He has some additional sp. but his subg. *Triantha* Nuttall is the real Abama 60 years older! that must be a Genus as stated.

3. ACROANTHES Raf. 1808, not 1818 as misprinted, well named ten years before Nuttall.

4. ACROSTICHUM AUREUM, Kunth describes

under that name another sp. quite unlike it or my *Acr. maritimum*!—I call it *Acr. acuminatum* Raf. pinnulis lanceolate acuminate base rounded petiolate entire thin costate, smooth above like stipes, beneath quite fructiferous all over. In Venezuela, ten feet high—I have found in Collins Herb. a very curious fern of Florida collected by Kin or Baldwin again as a doubtful *Acr. aureum*? which forms a most beautiful and wonderful N. G. of dorsiferous ferns without *Sori*, but with *capsules unconnected punctiform scattered* like minute dots. It shall be fully described and figured in my PTERIKON, a work now preparing. I announce it meantime as a great discovery proving that the capsules of Ferns may be solitary, and I call it.

5. NESORIS BICOLOR Raf. smooth, bipinnate, yellow beneath, pinnules sessile oblong crenate lobate, base acute, end obtuse, above nervose flabelate, behind nerve golden furfurascent, capsules irregularly scattered.—Pedal, stipes brown shining convex behind, grooved before, pinnules alternate, 25 to 33 on each branch, gradually smaller and nearly confluent. In Florida—I have several other N. G. of Ferns, but none so beautiful and anomalous; probably type of a new family NESORIDES.

6. OLSYNIUM; read Sisyrinchium throughout, misprinted Siryrinchium in the synonyms. See 878 flora tellur. where it is again described, another sp. added, and the akin blended Genera compared and settled.

Monograph of KUHNTIA.

Although I thought this monograph nearly complete, I have found other new sp. in Collins Herb. and I am told that Decandole in his 5th volume just published has many sp. under 3

Genera ! *Kuhnia*, *Critonia* and another? Therefore my labor shall have to be still further remodeled hereafter, meantime I will give here the additional N. sp. making 14 altogether.

7. *KUHNIA GLOMERATA* Raf. *K. critonia*? Nut. in Collins herb. smooth, stem grooved, branches terminal corymbose short 3-5flore, leaves scattered subsessile lanceolate short remotely serrate, flowers subsessile glomerate, pappus fulvous—Apalachian Mts. pedal, leaves uncial, flowers forming small round heads particularly after anthesis when they spread out.

8. *KUHNIA LATIFOLIA* Raf. *K. critonia* ! Coll. —nearly smooth, stem corymbose striate, leaves alternate sessile ovate oblong, grossly serrate, acute at both ends, very thin, on branches narrow oblong subentire, branches 1-3flore, flowers pedunculate, pappus fulvous—in Florida, leaves almost as in *K. elliptica*, but longer biuncial, on branches uncial quite different, never trinervate.

9. *KUHNIA VIRGATA* Raf. smooth, stem and branches virgate, striate whitish, leaves scattered sessile linear entire acute, flowers corymbose, pedunculate, pappus fulvescent—in Carolina and Florida, deemed *K. eupatorioides* by Collins, nearer the *Critonias* ; still nearer to *K. tuberosa* of Elliot. Tall plant, long slender branches, leaves uncial, perhaps *K. albicaulis* would be a better name.

Three other sp. were blended in Coll. herb. as *K. eupatorioides*, not a single one being that sp. since they had all fulvous pappus ; one was *K. fulva*, a 2d my *K. pubescens* from Cotocton Mts. on Potowmak, the 3d the next.

10. *KUHNIA DIVARICATA* Raf. scabriuscule, stem grooved fuscate, branches paniculate divari-

cate nearly naked, leaves scattered petiolate lanceolate grossly serrate, flowers corymbose pedunculate pappus fulvous—Apalachian Mts. tall plant, leaves uncial.

11. *KUHNIA CINEREA* Raf. cinereous pubescent, stem grooved corymbose above, leaves scattered sessile adpressed linear lanceolate entire; flowers fasciculate pedunculate cinereous, pappus fulvescent—a fine sp. found by myself in the Cumberland or Wasioto Mts. of East Kentucky and Tennessee, blended with *K. pubescens*, but now well distinguished and separated. Bipedal, leaves biuncial often falcate, branches multiflore, perianthe of flowers quite cinereous, floscules also, but not the pappus.

II PART—NEOPHYTON.

12. *LAXANON* 203, although very near to *Lapsana*, *Aposeris* and *Aptilon*, it is quite distinct from all; *Aposeris* of Necker differs by caliculate perianthe; my *Aptilon* which is the *Apogon* of Elliot, this name being employed by Lacedpede for a G. of fish, differs by perianthe in a double series and seeds striate as in *Crenamon*. These Genera will form a small group of the *Glossanthes*, with naked seeds *APOSERIDES* Raf. I have found in Coll. herb. a second sp. of *Laxanon* from Arkansas, deemed a doubtful plant near *Krigia* by Nuttal, I call it.

LAXANON HETEROPHYLUM Raf. stem flexuose ramose, radical leaves narrow remotely pinnatifid, segments lanceolate acute, stem leaves amplexicaule, linear lanceol. acute, involucre bifoliate unequal, umbels 2-5flore—Arkansas, annual, 6 to 8 inches high, leaves 2 or 3 inches long, flowers on filiform erect pedicels, perianthe commonly 5partite, few florets or ligules, seeds ovate.

13. *Thecanisia ponpurea* 295 read *Thec. purpurea*. Compare this G. with *Aegopogon* which is *Ulmaria* of others.

14. DIPLOSTELMA 316, add *Chetanthera* Nutt., not of Ruiz and Pavan, nor Persoon &c. thus this name was even employed and not applying as stated in the note at end of part—*Acticarnopus* misprinted for *Actinocarpus*.

15. BAPTISIA 321, add *B. versicolor* another beautiful sp. of this G. has been added from the S. W. which is either akin to *B. albiflora*, or perhaps a *Riparia*.

III PART—NEW SYLVA.

16. COLEMA 594, read COREMA.

17. CHIONANTHUS MARITIMA 706. compare with it and *Ch. heterophyllus*, the *Ch. pubescens* of Kunth and South America; but it has red flowers, while all the North American sp. have white flowers.

IV PART—NEOBOTANON.

18. RIVINA or PIERCEA OBLIQUATA 750; another proof that this is not the *R. humilis* (including many blended sp.) is found in Kunth, his plant of that name is described by him as smooth. with leaves ovate pubescent beneath shorter than racemes. From Mexico, perhaps another peculiar sp. *R. mollis* Raf.

19. LYONSIA 883, this *Lyonia* of Elliot is previous and very different from that of Nutt., which is a section of *Andromeda*, that I have called *HEMICLIS* meaning *half valves*, as the fruit has 5 half valves alternate. *Lyonia* would be almost like *Allionia*, and the botanist name was really *Lyons*.

20. *TRIODANIS RUPESTRIS* 906, this is very near to the *Campanula flagellaris* of Kunth, perhaps of this Genus. His Mexican *C. perfoliata* appears somewhat different from ours by flowers geminate and ternate; yet Torrey would have all these to be varieties! which is the type then and the primordial form?

21. *HELENIUM DISCOVATUM* 942, compare it with *H. mexicanum* of Kunth, too shortly noticed by him.

END OF THIS FLORA.

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OF GENERA, SUBGENERA &c.

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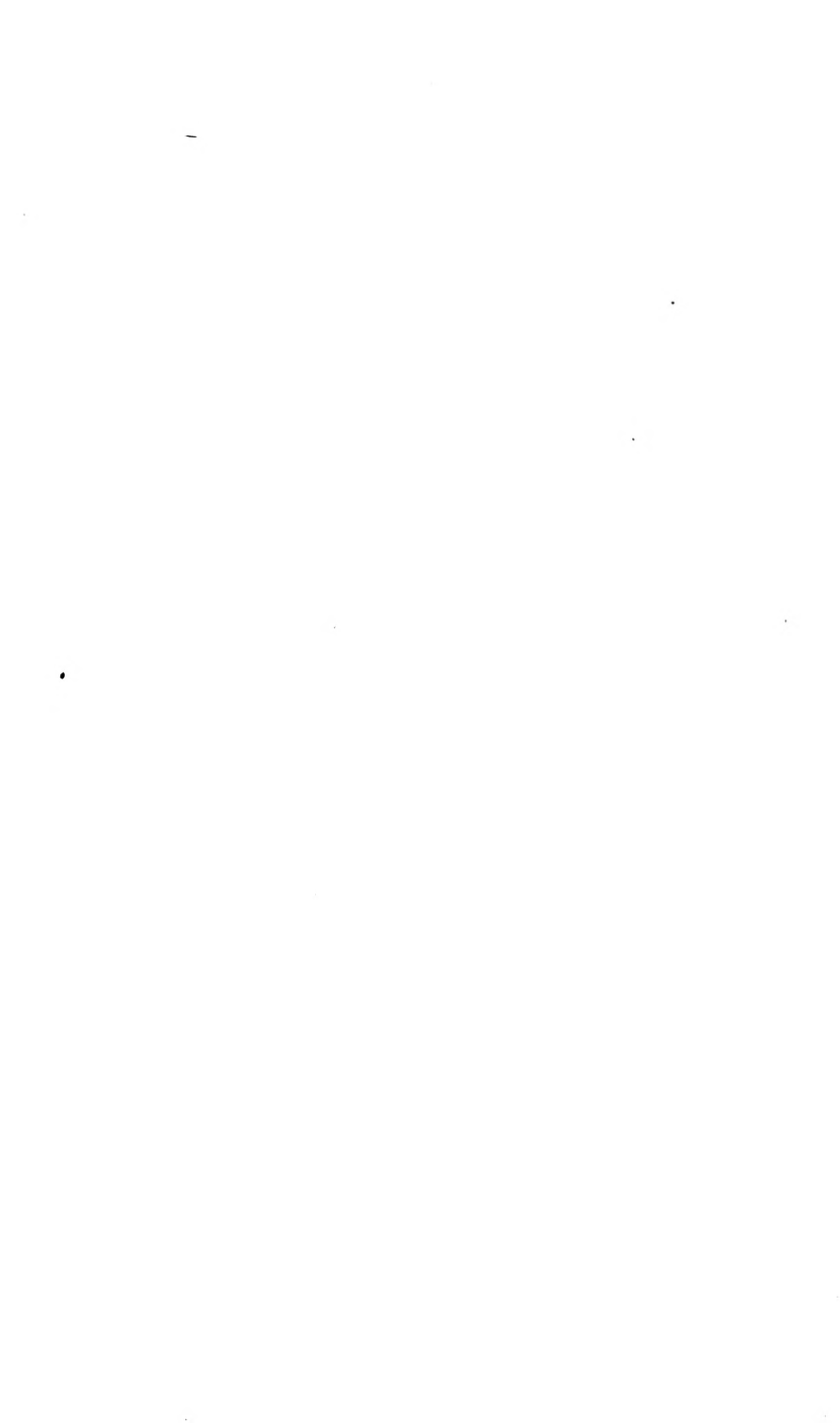
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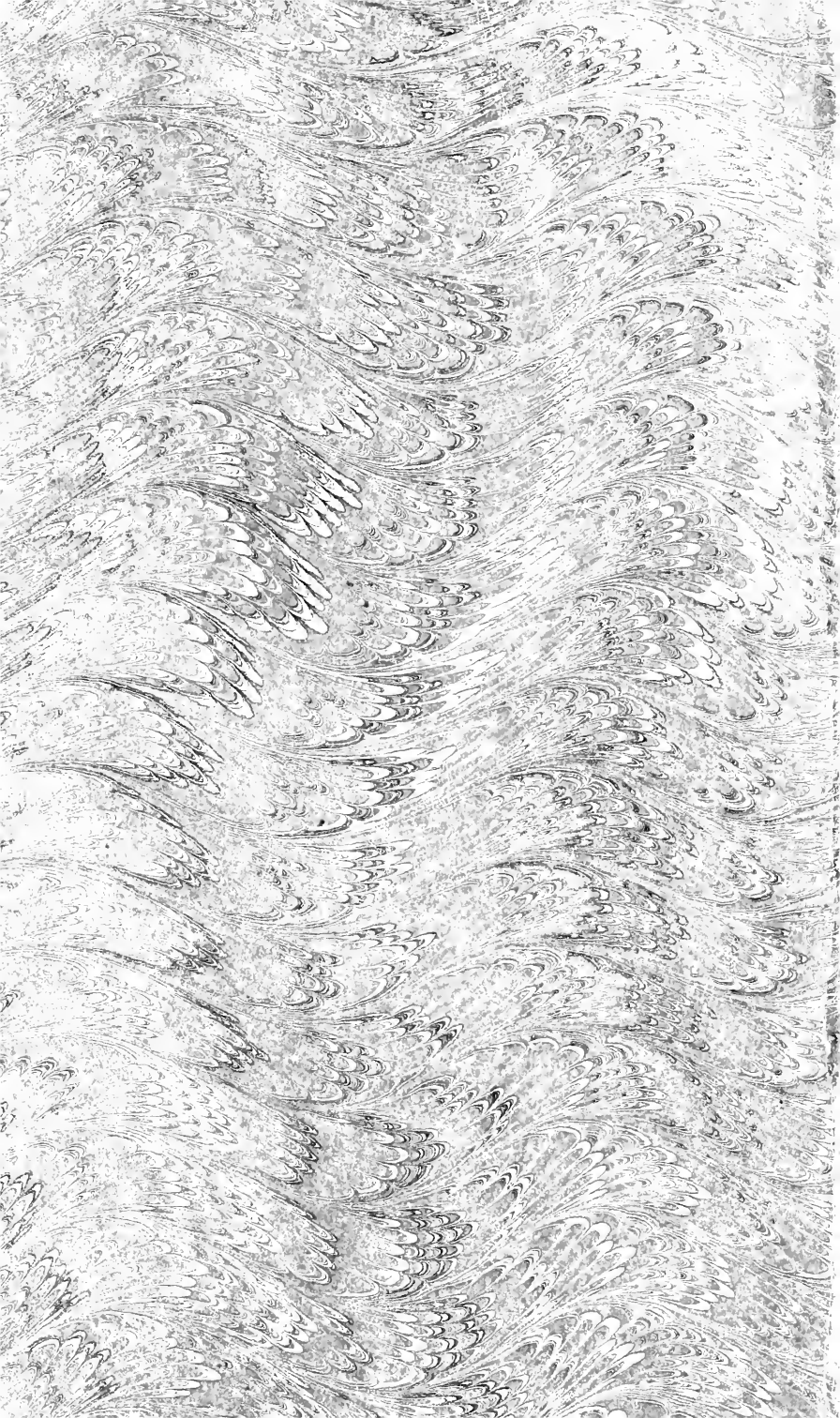
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